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THE
AMERICAN EPHEMERIS

AND
NAUTICAL ALMANAC

FOR THE YEAR

1 8 9 7

FIRST EDITION

PUBLISHED IN COMPLIANCE WITH A JOINT RESOLUTION OF THE FORTY-SIXTH CONGRESS

WASHINGTON:
BUREAU OF EQUIPMENT.

1894.

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The Nautical Almanac

JOINT RESOLUTION

FOR PRINTING THE AMERICAN EPHEMERIS AND NAUTICAL ALMANAC.

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That there shall be printed annually at the Government Printing Office fifteen hundred copies of the American Ephemeris and Nautical Almanac and of the papers supplementary thereto, of which one hundred shall be for the use of the Senate, four hundred for the House of Representatives, and one thousand for the public service, to be distributed by the Navy Department.

Sec. 2. That additional copies of the Ephemeris and of the Nautical Almanac extracted therefrom may be ordered by the Secretary of the Navy for sale: Provided, That all moneys received from such sale shall be deposited in the Treasury to the credit of the appropriation for public printing.

Approved, February 11, 1880.

P R E F A C E.

THE arrangement of *The American Ephemeris* adopted in the volume for the year 1882, and explained in the Appendix to that volume, has been continued without radical change to the present time.

The additions then made comprise more complete data for eclipses of the sun, diagrams showing the configurations of the satellites of Jupiter, data respecting the disks of Mercury and Venus for the reduction of meridian and photometric observations, and diagrams, with tables, for identifying any known satellites of other planets. The work is divided into three parts, as follows:—

PART I, *Ephemeris for the Meridian of Greenwich*, gives the geocentric and heliocentric positions of the major planets, the Ephemeris of the Sun, and other fundamental astronomical data for equi-distant intervals of Greenwich mean time.

PART II, *Ephemeris for the Meridian of Washington*, gives the ephemerides of the fixed stars, sun, moon, and major planets for transit over the meridian of the old Naval Observatory, Washington. The mean places of the fixed stars and the data for their reduction are also included in this part. The list of mean and apparent places of fixed stars was greatly enlarged in 1885 for the convenience of field-astronomers.

PART III, *Phenomena*, contains predictions of phenomena to be observed, with data for their computation. Washington mean time of the old Naval Observatory is used in this part except in a few cases, notably that of eclipses, where Greenwich mean time was judged more convenient.

SIMON NEWCOMB,

Professor U. S. Navy, Superintendent.

WASHINGTON, March, 1894.

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CORRECTIONS.

Ephemeris for 1894.

Page.

149, Sept. 27 and 28, subtract 1 day from the Moon's age.				
295 and 299, Magnitude of χ Draconis,	for	5.3	read	3.8
297, Magnitude of Groombridge 4163,	for	7.0	read	6.6
414, Log $\Delta\mu$ for 1 minute,	for	9.4154	read	1.1762
416, Log $\Delta\mu$ for 1 minute,	for	9.4177	read	1.1762
417, Eclipse of Sept. 28. The numbers in the column Duration of Totality should be multiplied by ten, and from 16 ^h 5 ^m to 19 ^h 10 ^m the width of the shadow-path should be increased in the same ratio.				
489,	for	Nov. 11 ^d 0 ^h 56 ^m	read	Nov. 12 ^d 0 ^h 56 ^m

Ephemeris for 1895. (First Edition only.)

5, Jan. 1. Moon's Merid. Pass.,	for	4 ^h 9.6 ^m	read	4 ^h 9 ^m .9
280, Independent Star Numbers,	for	3 ^d .07261	read	3 ^d .07263
295 and 299, Magnitude of χ Draconis,	for	5.3	read	3.8
297, Magnitude of Groombridge 4163,	for	7.0	read	6.6
414, Solar Eclipse of Sept. 3.	Total eclipse begins	3 ^d 16 ^h 6 ^m .4	read	3 ^d 17 ^h 6 ^m .4
415, Solar Eclipse of Sept. 18.	Eclipse begins in long.	167° 4'.8 W.,	read	164° 20'.1 E.
	Greatest Eclipse in long.	169° 13'.9 E.	read	140° 38'.9 E.
	Eclipse ends in long.	47° 42'.8 W.	read	76° 17'.8 W.
418, Solar Eclipse of Sept. 18.	The values of μ should be increased by	28° 35'		
In the chart of this eclipse the diagram should be 28° 35' farther to the west.				
419, Moon's last quarter Oct. 10 and first quarter Oct. 24, subtract one minute from the given times.				
489, Insert Aug. 13 ^d 2 ^h ♀ greatest brilliancy.				
489, Insert October 25 ^d 18 ^h , ♀ greatest brilliancy.				
489, Nov. 8 ^d 14 ^h	for	♂	read	♂
493, Longitude of Tokio,	for	— 16 ^h 14 ^m 19 ^s .85	read	— 14 ^h 27 ^m 10 ^s .0
	for	— 11 ^h 6 ^m 7 ^s .81	read	— 9 ^h 18 ^m 58 ^s .0
493, Longitude of West Point,	for	— 4 ^h 55 ^m 50 ^s .55	read	+ 4 ^h 55 ^m 50 ^s .55
502, line 3,	for	0.2966	read	0.2877
505, line 48, Omit the words "and a transit of Mercury."				
516, line 15,	for	± 4 ^m .707	read	± 14 ^m .707
521, line 7,	for	0''.31	read	0''.28
521, Sirius 1896.0 $\Delta\alpha$	for	+ 0 ^s .083	read	+ 0 ^s .092

Ephemeris for 1896. (First Edition only.)

295 and 299, Magnitude of χ Draconis	for	5.3	read	3.8
297, Magnitude of Groombridge 4163,	for	7.0	read	6.6
289-292, Top of column Log. i , strike out				
417, Moon's Greatest Libration March,	for	5 ^d 24 ^h 11 ^m	read	6 ^d 0 ^h 11 ^m
461, Satellite II,	for	Dec. 28	read	Dec. 29
508, Line 4 from bottom,	for	perpendicular	read	perpendicular
511, Line 22 from top,	for	computer	read	computer

CHRONOLOGICAL ERAS AND CYCLES.

CHRONOLOGICAL ERAS.

THE YEAR 1897, WHICH COMPRISES THE LATTER PART OF THE 121ST AND THE FIRST PART OF THE 122ND YEAR OF THE INDEPENDENCE OF THE UNITED STATES OF AMERICA, CORRESPONDS TO—

The year 6610 of the Julian Period;

- " 7405-7406 of the Byzantine era, the year 7405 commencing on September 1st;
- " 5657-5658 of the Jewish era, the year 5658 commencing on September 27th, or, more exactly, at sunset on September 26th;
- " 2650 since the foundation of Rome, according to VARRO;
- " 2644 since the beginning of the era of NABONASSAR, which has been assigned to Wednesday, the 26th of February of the 3967th year of the Julian Period; corresponding, in the notation of chronologists, to the 747th; and, in the notation of astronomers, to the 746th year before the birth of CHRIST;
- " 2673 of the Olympiads, or the first year of the 669th Olympiad commencing in July, 1897, if we fix the era of the Olympiads at $775\frac{1}{2}$ years before CHRIST, or near the beginning of July of the year 3938 of the Julian Period;
- " 2209 of the Grecian era, or the era of the SELEUCIDÆ;
- " 1613 of the era of DIOCLETIAN;
- " 2557 of the Japanese era and to the 30th year of the period entitled "Meiji."

The year 1315 of the Mohammedan era, or the era of the Hegira, begins on the 2nd day of June, 1897.

The first day of January of the year 1897 is the 2,413,926th day since the commencement of the Julian Period.

CHRONOLOGICAL CYCLES.

Dominical Letter	C	Solar Cycle	2
Epact	26	Roman Indiction	10
Lunar Cycle or Golden Number	17	Julian Period	6610

SYMBOLS AND ABBREVIATIONS.

SIGNS OF THE PLANETS, ETC.

☉	The Sun.	♂	Mars.
☾	The Moon.	♃	Jupiter.
☿	Mercury.	♄	Saturn.
♀	Venus.	♅	Uranus.
♁	The Earth.	♆	Neptune.

SIGNS OF THE ZODIAC.

Spring Signs.	{	1. ♈	Aries.	Autumn Signs.	{	7. ♎	Libra.
		2. ♉	Taurus.			8. ♏	Scorpius.
		3. ♊	Gemini.			9. ♐	Sagittarius.
Summer Signs.	{	4. ♋	Cancer.	Winter Signs.	{	10. ♑	Capricornus.
		5. ♌	Leo.			11. ♒	Aquarius.
		6. ♍	Virgo.			12. ♓	Pisces.

ASPECTS.

- ♌ Conjunction, or having the same Longitude or Right Ascension.
- ☐ Quadrature, or differing 90° in Longitude or Right Ascension.
- ♌ Opposition, or differing 180° in Longitude or Right Ascension.

ABBREVIATIONS.

♊	Ascending Node.	°	Degrees.
♋	Descending Node.	'	Minutes of Arc.
N.	North.	"	Seconds of Arc.
S.	South.	h	Hours.
E.	East.	m	Minutes of Time.
W.	West.	s	Seconds of Time.

PART I

ASTRONOMICAL EPHEMERIS

FOR THE

MERIDIAN OF GREENWICH

AT GREENWICH APPARENT NOON.									
Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to Apparent Time.	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		^h ^m ^s	^s	[°] ['] ["]	["]	['] ["]	^s	^m ^s	^s
Frid.	1	18 49 36.44	11.038	S.22 57 52.4	+13.08	16 18.36	71.03	4 0.80	1.178
Sat.	2	18 54 1.19	11.023	22 52 24.7	14.22	16 18.35	70.98	4 28.90	1.162
SUN.	3	18 58 25.56	11.007	22 46 29.6	15.36	16 18.34	70.93	4 56.64	1.146
Mon.	4	19 2 49.54	10.990	22 40 7.4	+16.49	16 18.33	70.88	5 23.98	1.129
Tues.	5	19 7 13.07	10.971	22 33 18.1	17.61	16 18.31	70.82	5 50.88	1.111
Wed.	6	19 11 36.14	10.951	22 26 2.1	18.72	16 18.29	70.76	6 17.32	1.091
Thur.	7	19 15 58.70	10.929	22 18 19.6	+19.82	16 18.27	70.69	6 43.25	1.070
Frid.	8	19 20 20.73	10.907	22 10 10.8	20.91	16 18.24	70.62	7 8.66	1.047
Sat.	9	19 24 42.20	10.883	22 1 36.0	21.99	16 18.20	70.54	7 33.50	1.023
SUN.	10	19 29 3.09	10.858	21 52 35.4	+23.06	16 18.16	70.46	7 57.77	0.998
Mon.	11	19 33 23.38	10.832	21 43 9.4	24.12	16 18.12	70.38	8 21.43	0.973
Tues.	12	19 37 43.02	10.805	21 33 18.1	25.16	16 18.07	70.30	8 44.45	0.946
Wed.	13	19 42 2.02	10.778	21 23 1.9	+26.19	16 18.02	70.21	9 6.83	0.918
Thur.	14	19 46 20.35	10.750	21 12 21.1	27.21	16 17.96	70.12	9 28.54	0.890
Frid.	15	19 50 37.99	10.721	21 1 15.9	28.22	16 17.90	70.03	9 49.57	0.862
Sat.	16	19 54 54.93	10.691	20 49 46.8	+29.21	16 17.83	69.94	10 9.89	0.832
SUN.	17	19 59 11.16	10.661	20 37 54.0	30.19	16 17.75	69.84	10 29.51	0.802
Mon.	18	20 3 26.66	10.630	20 25 37.8	31.16	16 17.67	69.74	10 48.40	0.772
Tues.	19	20 7 41.43	10.600	20 12 58.4	+32.11	16 17.58	69.64	11 6.56	0.741
Wed.	20	20 11 55.44	10.569	19 59 56.4	33.05	16 17.48	69.54	11 23.98	0.710
Thur.	21	20 16 8.72	10.537	19 46 31.9	33.98	16 17.38	69.43	11 40.64	0.679
Frid.	22	20 20 21.22	10.505	19 32 45.3	+34.89	16 17.27	69.32	11 56.55	0.647
Sat.	23	20 24 32.96	10.473	19 18 36.9	35.79	16 17.16	69.21	12 11.69	0.615
SUN.	24	20 28 43.92	10.441	19 4 7.2	36.68	16 17.04	69.10	12 26.06	0.583
Mon.	25	20 32 54.11	10.408	18 49 16.5	+37.55	16 16.92	68.99	12 39.65	0.550
Tues.	26	20 37 3.50	10.375	18 34 5.1	38.41	16 16.79	68.88	12 52.45	0.517
Wed.	27	20 41 12.10	10.342	18 18 33.4	39.25	16 16.65	68.77	13 4.46	0.484
Thur.	28	20 45 19.91	10.309	18 2 41.8	+40.06	16 16.52	68.66	13 15.68	0.451
Frid.	29	20 49 26.91	10.275	17 46 30.8	40.86	16 16.38	68.54	13 26.09	0.417
Sat.	30	20 53 33.10	10.241	17 30 0.6	41.64	16 16.23	68.43	13 35.70	0.383
SUN.	31	20 57 38.47	10.207	17 13 11.8	42.41	16 16.09	68.32	13 44.49	0.349
Mon.	32	21 1 43.02	10.173	S.16 56 4.8	+43.16	16 15.94	68.20	13 52.47	0.315

NOTE.—The mean time of semidiameter passing may be found by subtracting 0.19 from the sidereal time.

The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing.

AT GREENWICH MEAN NOON.								
Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		h m s	s	° ' "	"	m s	s	h m s
Frid.	1	18 49 35.70	11.034	S.22 57 53.3	+13.08	4 0.71	1.178	18 45 34.99
Sat.	2	18 54 0.37	11.020	22 52 25.8	14.22	4 28.82	1.163	18 49 31.55
SUN.	3	18 58 24.66	11.004	22 46 30.9	15.35	4 56.55	1.147	18 53 28.11
Mon.	4	19 2 48.55	10.986	22 40 8.9	+16.47	5 23.88	1.130	18 57 24.67
Tues.	5	19 7 12.00	10.967	22 33 19.9	17.59	5 50.77	1.111	19 1 21.23
Wed.	6	19 11 34.99	10.947	22 26 4.1	18.70	6 17.20	1.091	19 5 17.79
Thur.	7	19 15 57.47	10.926	22 18 21.9	+19.81	6 43.13	1.069	19 9 14.34
Frid.	8	19 20 19.43	10.903	22 10 13.3	20.90	7 8.53	1.046	19 13 10.90
Sat.	9	19 24 40.83	10.880	22 1 38.8	21.98	7 33.37	1.023	19 17 7.46
SUN.	10	19 29 1.65	10.855	21 52 38.5	+23.05	7 57.63	0.999	19 21 4.02
Mon.	11	19 33 21.87	10.829	21 43 12.8	24.10	8 21.29	0.973	19 25 0.58
Tues.	12	19 37 41.45	10.802	21 33 21.8	25.14	8 44.31	0.946	19 28 57.13
Wed.	13	19 42 0.38	10.775	21 23 5.9	+26.17	9 6.69	0.918	19 32 53.69
Thur.	14	19 46 18.65	10.747	21 12 25.4	27.19	9 28.40	0.890	19 36 50.25
Frid.	15	19 50 36.23	10.718	21 1 20.6	28.20	9 49.42	0.862	19 40 46.81
Sat.	16	19 54 53.12	10.689	20 49 51.8	+29.20	10 9.75	0.833	19 44 43.37
SUN.	17	19 59 9.29	10.659	20 37 59.3	30.18	10 29.37	0.802	19 48 39.92
Mon.	18	20 3 24.74	10.629	20 25 43.4	31.15	10 48.26	0.772	19 52 36.48
Tues.	19	20 7 39.46	10.598	20 13 4.4	+32.10	11 6.42	0.741	19 56 33.04
Wed.	20	20 11 53.44	10.567	20 0 2.7	33.04	11 23.84	0.710	20 0 29.60
Thur.	21	20 16 6.66	10.535	19 46 38.5	33.97	11 40.51	0.679	20 4 26.15
Frid.	22	20 20 19.13	10.503	19 32 52.3	+34.88	11 56.42	0.647	20 8 22.71
Sat.	23	20 24 30.83	10.471	19 18 44.3	35.78	12 11.56	0.615	20 12 19.27
SUN.	24	20 28 41.76	10.439	19 4 14.9	36.66	12 25.93	0.583	20 16 15.83
Mon.	25	20 32 51.91	10.407	18 49 24.5	+37.53	12 39.53	0.550	20 20 12.38
Tues.	26	20 37 1.28	10.374	18 34 13.4	38.38	12 52.34	0.517	20 24 8.94
Wed.	27	20 41 9.85	10.341	18 18 42.0	39.22	13 4.35	0.484	20 28 5.50
Thur.	28	20 45 17.63	10.308	18 2 50.7	+40.04	13 15.58	0.451	20 32 2.05
Frid.	29	20 49 24.61	10.274	17 46 40.0	40.85	13 26.00	0.417	20 35 58.61
Sat.	30	20 53 30.78	10.240	17 30 10.1	41.64	13 35.61	0.384	20 39 55.17
SUN.	31	20 57 36.13	10.206	17 13 21.6	42.40	13 44.41	0.350	20 43 51.72
Mon.	32	21 1 40.67	10.172	S.16 56 14.9	+43.15	13 52.39	0.316	20 47 48.28
<p>NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing.</p>								<p>Diff. for 1 Hour, +9°.8565. (Table III.)</p>

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ'					
1	1	281 24 29.2	24 17.0	152.96	— 0.64	9.9926767	+ 0.7	h m s 5 13 33.50
2	2	282 25 40.2	25 27.8	152.96	0.57	9.9926793	1.5	5 9 37.59
3	3	283 26 51.4	26 38.8	152.96	0.46	9.9926837	2.2	5 5 41.67
4	4	284 28 2.5	27 49.7	152.96	— 0.35	9.9926897	+ 2.9	5 1 45.76
5	5	285 29 13.4	29 0.4	152.95	0.23	9.9926973	3.6	4 57 49.85
6	6	286 30 24.0	30 10.8	152.93	— 0.10	9.9927067	4.3	4 53 53.94
7	7	287 31 34.2	31 20.8	152.91	+ 0.03	9.9927179	+ 5.0	4 49 58.02
8	8	288 32 43.9	32 30.4	152.89	0.15	9.9927308	5.8	4 46 2.11
9	9	289 33 53.1	33 39.4	152.87	0.25	9.9927456	6.6	4 42 6.20
10	10	290 35 1.7	34 47.8	152.85	+ 0.34	9.9927625	+ 7.5	4 38 10.28
11	11	291 36 9.7	35 55.6	152.82	0.38	9.9927816	8.4	4 34 14.37
12	12	292 37 17.0	37 2.8	152.79	0.41	9.9928030	9.4	4 30 18.46
13	13	293 38 23.6	38 9.2	152.76	+ 0.41	9.9928268	+10.4	4 26 22.55
14	14	294 39 29.4	39 14.8	152.73	0.38	9.9928531	11.5	4 22 26.64
15	15	295 40 34.5	40 19.7	152.70	0.31	9.9928819	12.6	4 18 30.72
16	16	296 41 38.9	41 23.9	152.67	+ 0.22	9.9929135	+13.7	4 14 34.81
17	17	297 42 42.7	42 27.6	152.64	+ 0.11	9.9929478	14.9	4 10 38.90
18	18	298 43 45.7	43 30.4	152.61	— 0.01	9.9929849	16.0	4 6 42.99
19	19	299 44 48.1	44 32.6	152.58	— 0.14	9.9930248	+17.2	4 2 47.08
20	20	300 45 49.9	45 34.3	152.56	0.28	9.9930673	18.3	3 58 51.17
21	21	301 46 51.1	46 35.3	152.54	0.41	9.9931126	19.4	3 54 55.25
22	22	302 47 51.8	47 35.8	152.51	— 0.53	9.9931604	+20.5	3 50 59.34
23	23	303 48 51.8	48 35.6	152.49	0.62	9.9932107	21.5	3 47 3.43
24	24	304 49 51.4	49 35.1	152.46	0.70	9.9932635	22.4	3 43 7.52
25	25	305 50 50.3	50 33.8	152.44	— 0.74	9.9933183	+23.3	3 39 11.61
26	26	306 51 48.7	51 32.1	152.42	0.76	9.9933753	24.1	3 35 15.70
27	27	307 52 46.4	52 29.6	152.39	0.74	9.9934343	24.9	3 31 19.79
28	28	308 53 43.4	53 26.4	152.36	— 0.70	9.9934950	+25.6	3 27 23.88
29	29	309 54 39.7	54 22.6	152.33	0.63	9.9935573	26.3	3 23 27.97
30	30	310 55 35.2	55 17.9	152.29	0.54	9.9936212	26.9	3 19 32.06
31	31	311 56 29.7	56 12.3	152.25	0.43	9.9936866	27.5	3 15 36.14
32	32	312 57 23.3	57 5.7	152.21	— 0.30	9.9937533	+21.8	3 11 40.23
NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ' to the mean equinox of January 0 th .								Diff. for 1 Hour. —9 ^h .8296. (Table II.)

GREENWICH MEAN TIME.

Day of the Month.	THE MOON'S									
	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.	
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.	
	' "	' "	' "	"	' "	"	h m	m	d	
1	16 16.4	16 13.7	59 36.8	-0.69	59 27.1	-0.93	23 20.2	2.60	27.8	
2	16 10.3	16 6.2	59 14.6	1.15	58 59.6	1.35	6		28.8	
3	16 1.5	15 56.2	58 42.1	1.53	58 22.7	1.69	0 21.0	2.45	0.2	
4	15 50.5	15 44.4	58 1.6	-1.80	57 39.5	-1.88	1 17.3	2.24	1.2	
5	15 38.2	15 31.9	57 16.6	1.91	56 53.6	1.91	2 8.5	2.03	2.2	
6	15 25.7	15 19.7	56 30.8	1.87	56 8.7	1.80	2 55.2	1.87	3.2	
7	15 14.0	15 8.7	55 47.7	-1.69	55 28.1	-1.55	3 38.6	1.75	4.2	
8	15 3.8	14 59.6	55 10.4	1.39	54 54.7	1.22	4 19.8	1.69	5.2	
9	14 55.9	14 52.9	54 41.2	1.02	54 30.2	0.81	5 0.1	1.68	6.2	
10	14 50.6	14 49.0	54 21.8	-0.59	54 16.0	-0.38	5 40.7	1.71	7.2	
11	14 48.2	14 48.0	54 12.8	-0.15	54 12.3	+0.07	6 22.7	1.79	8.2	
12	14 48.6	14 49.9	54 14.4	+0.28	54 19.1	0.49	7 7.1	1.90	9.2	
13	14 51.8	14 54.3	54 26.1	+0.68	54 35.5	+0.87	7 54.3	2.04	10.2	
14	14 57.4	15 1.0	54 46.9	1.03	55 0.1	1.17	8 44.8	2.16	11.2	
15	15 5.1	15 9.5	55 15.0	1.30	55 31.2	1.39	9 38.0	2.26	12.2	
16	15 14.2	15 19.1	55 48.4	+1.46	56 6.3	+1.51	10 32.7	2.29	13.2	
17	15 24.0	15 29.0	56 24.6	1.53	56 43.0	1.53	11 27.4	2.26	14.2	
18	15 34.0	15 38.8	57 1.2	1.49	57 18.9	1.44	12 20.8	2.18	15.2	
19	15 43.4	15 47.7	57 35.8	+1.36	57 51.5	+1.25	13 12.1	2.09	16.2	
20	15 51.6	15 55.2	58 5.9	1.15	58 19.1	1.04	14 1.3	2.02	17.2	
21	15 58.4	16 1.2	58 30.8	0.91	58 41.0	0.78	14 49.1	1.97	18.2	
22	16 3.5	16 5.5	58 49.6	+0.66	58 56.8	+0.54	15 36.5	1.98	19.2	
23	16 7.1	16 8.3	59 2.6	0.43	59 7.0	0.32	16 24.8	2.04	20.2	
24	16 9.1	16 9.6	59 10.2	0.21	59 12.1	+0.12	17 15.1	2.16	21.2	
25	16 9.9	16 9.8	59 13.0	+0.03	59 12.7	-0.07	18 8.5	2.30	22.2	
26	16 9.4	16 8.8	59 11.3	-0.16	59 8.9	0.25	19 5.6	2.45	23.2	
27	16 7.8	16 6.5	59 5.3	0.35	59 0.5	0.45	20 5.8	2.55	24.2	
28	16 4.9	16 2.9	58 54.5	-0.55	58 47.2	-0.67	21 7.3	2.56	25.2	
29	16 0.5	15 57.7	58 38.5	0.79	58 28.3	0.90	22 7.6	2.46	26.2	
30	15 54.6	15 51.1	58 16.8	1.02	58 3.9	1.13	23 4.7	2.29	27.2	
31	15 47.2	15 43.0	57 49.7	1.23	57 34.3	1.32	23 57.5	2.11	28.2	
32	15 38.6	15 33.9	57 17.9	-1.40	57 0.7	-1.46	6		29.2	

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 1.					SUNDAY 3.				
0	17 6 53.20	2.7013	S. 27 17 1.2	1.557	0	19 13 37.53	2.5182	S. 24 54 30.6	7.142
1	17 9 35.29	2.7016	27 18 28.8	1.362	1	19 16 8.41	2.5111	24 47 17.5	7.294
2	17 12 17.39	2.7017	27 19 44.7	1.167	2	19 18 38.86	2.5039	24 39 55.3	7.444
3	17 14 59.49	2.7016	27 20 48.9	0.972	3	19 21 8.88	2.4967	24 32 24.2	7.592
4	17 17 41.58	2.7012	27 21 41.4	0.777	4	19 23 38.46	2.4893	24 24 44.2	7.739
5	17 20 23.64	2.7007	27 22 22.1	0.581	5	19 26 7.59	2.4818	24 16 55.5	7.883
6	17 23 5.67	2.7001	27 22 51.1	0.386	6	19 28 36.28	2.4744	24 8 58.2	8.027
7	17 25 47.65	2.6992	27 23 8.4	- 0.191	7	19 31 4.52	2.4668	24 0 52.3	8.168
8	17 28 29.57	2.6982	27 23 14.0	+ 0.005	8	19 33 32.30	2.4592	23 52 38.0	8.308
9	17 31 11.43	2.6970	27 23 7.8	0.200	9	19 35 59.63	2.4517	23 44 15.3	8.447
10	17 33 53.21	2.6955	27 22 50.0	0.394	10	19 38 26.50	2.4439	23 35 44.4	8.583
11	17 36 34.89	2.6938	27 22 20.5	0.588	11	19 40 52.90	2.4361	23 27 5.4	8.717
12	17 39 16.47	2.6921	27 21 39.4	0.782	12	19 43 18.83	2.4283	23 18 18.4	8.849
13	17 41 57.94	2.6901	27 20 46.7	0.975	13	19 45 44.29	2.4205	23 9 23.5	8.980
14	17 44 39.28	2.6878	27 19 42.4	1.168	14	19 48 9.29	2.4127	23 0 20.8	9.109
15	17 47 20.48	2.6854	27 18 26.5	1.361	15	19 50 33.82	2.4049	22 51 10.4	9.237
16	17 50 1.53	2.6828	27 16 59.1	1.552	16	19 52 57.88	2.3970	22 41 52.4	9.362
17	17 52 42.42	2.6802	27 15 20.3	1.743	17	19 55 21.46	2.3890	22 32 26.9	9.486
18	17 55 23.15	2.6773	27 13 30.0	1.933	18	19 57 44.56	2.3810	22 22 54.1	9.607
19	17 58 3.70	2.6742	27 11 28.3	2.123	19	20 0 7.18	2.3731	22 13 14.0	9.727
20	18 0 44.05	2.6708	27 9 15.2	2.312	20	20 2 29.33	2.3652	22 3 26.8	9.846
21	18 3 24.20	2.6674	27 6 50.9	2.499	21	20 4 51.00	2.3572	21 53 32.5	9.963
22	18 6 4.14	2.6637	27 4 15.3	2.687	22	20 7 12.19	2.3492	21 43 31.3	10.077
23	18 8 43.85	2.6599	S. 27 1 28.4	2.874	23	20 9 32.90	2.3411	S. 21 33 23.3	10.189
SATURDAY 2.					MONDAY 4.				
0	18 11 23.33	2.6560	S. 26 58 30.4	3.059	0	20 11 53.12	2.3330	S. 21 23 8.6	10.301
1	18 14 2.57	2.6518	26 55 21.3	3.244	1	20 14 12.86	2.3251	21 12 47.2	10.410
2	18 16 41.55	2.6475	26 52 1.1	3.427	2	20 16 32.13	2.3172	21 2 19.4	10.517
3	18 19 20.27	2.6431	26 48 30.0	3.609	3	20 18 50.92	2.3092	20 51 45.2	10.623
4	18 21 58.72	2.6385	26 44 48.0	3.791	4	20 21 9.23	2.3012	20 41 4.7	10.727
5	18 24 36.89	2.6337	26 40 55.1	3.972	5	20 23 27.06	2.2932	20 30 18.0	10.828
6	18 27 14.76	2.6287	26 36 51.4	4.151	6	20 25 44.41	2.2852	20 19 25.3	10.928
7	18 29 52.33	2.6237	26 32 37.0	4.328	7	20 28 1.29	2.2773	20 8 26.6	11.027
8	18 32 29.60	2.6185	26 28 12.0	4.505	8	20 30 17.69	2.2694	19 57 22.1	11.123
9	18 35 6.55	2.6131	26 23 36.4	4.681	9	20 32 33.62	2.2616	19 46 11.8	11.218
10	18 37 43.17	2.6076	26 18 50.3	4.855	10	20 34 49.08	2.2537	19 34 55.9	11.312
11	18 40 19.46	2.6020	26 13 53.8	5.027	11	20 37 4.07	2.2458	19 23 34.4	11.403
12	18 42 55.41	2.5962	26 8 47.0	5.199	12	20 39 18.58	2.2380	19 12 7.5	11.492
13	18 45 31.01	2.5903	26 3 29.9	5.369	13	20 41 32.63	2.2303	19 0 35.3	11.581
14	18 48 6.25	2.5843	25 58 2.7	5.537	14	20 43 46.22	2.2226	18 48 57.8	11.667
15	18 50 41.13	2.5782	25 52 25.4	5.705	15	20 45 59.34	2.2149	18 37 15.2	11.752
16	18 53 15.64	2.5719	25 46 38.1	5.871	16	20 48 12.00	2.2072	18 25 27.6	11.835
17	18 55 49.76	2.5655	25 40 40.9	6.036	17	20 50 24.20	2.1996	18 13 35.0	11.917
18	18 58 23.50	2.5591	25 34 33.8	6.199	18	20 52 35.95	2.1920	18 1 37.6	11.996
19	19 0 56.85	2.5525	25 28 17.0	6.360	19	20 54 47.24	2.1845	17 49 35.5	12.073
20	19 3 29.80	2.5458	25 21 50.6	6.519	20	20 56 58.09	2.1771	17 37 28.8	12.150
21	19 6 2.35	2.5391	25 15 14.7	6.677	21	20 59 8.49	2.1696	17 25 17.5	12.225
22	19 8 34.49	2.5322	25 8 29.3	6.834	22	21 1 18.44	2.1622	17 13 1.8	12.297
23	19 11 6.22	2.5253	25 1 34.6	6.989	23	21 3 27.95	2.1549	17 0 41.8	12.368
24	19 13 37.53	2.5182	S. 24 54 30.6	7.142	24	21 5 37.03	2.1477	S. 16 48 17.6	12.438

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 5.					THURSDAY 7.				
0	21 5 37.03	2.1477	S. 16 48 17.6	12.438	0	22 41 35.31	1.8802	S. 5 57 58.8	14.174
1	21 7 45.67	2.1404	16 35 49.2	12.507	1	22 43 28.01	1.8765	5 43 48.1	14.182
2	21 9 53.88	2.1332	16 23 16.8	12.573	2	22 45 20.49	1.8729	5 29 36.9	14.189
3	21 12 1.65	2.1260	16 10 40.4	12.638	3	22 47 12.76	1.8694	5 15 25.4	14.195
4	21 14 9.00	2.1190	15 58 0.2	12.702	4	22 49 4.82	1.8661	5 1 13.5	14.201
5	21 16 15.93	2.1121	15 45 16.2	12.764	5	22 50 56.69	1.8628	4 47 1.3	14.205
6	21 18 22.45	2.1052	15 32 28.5	12.825	6	22 52 48.36	1.8596	4 32 48.9	14.208
7	21 20 28.55	2.0983	15 19 37.2	12.884	7	22 54 39.84	1.8564	4 18 36.3	14.211
8	21 22 34.24	2.0914	15 6 42.4	12.941	8	22 56 31.13	1.8533	4 4 23.6	14.213
9	21 24 39.52	2.0847	14 53 44.3	12.996	9	22 58 22.23	1.8502	3 50 10.8	14.213
10	21 26 44.40	2.0781	14 40 42.9	13.051	10	23 0 13.15	1.8473	3 35 58.0	14.213
11	21 28 48.89	2.0715	14 27 38.2	13.105	11	23 2 3.91	1.8446	3 21 45.3	14.212
12	21 30 52.98	2.0649	14 14 30.3	13.157	12	23 3 54.50	1.8419	3 7 32.6	14.210
13	21 32 56.68	2.0585	14 1 19.4	13.207	13	23 5 44.93	1.8392	2 53 20.1	14.207
14	21 35 0.00	2.0521	13 48 5.5	13.255	14	23 7 35.20	1.8365	2 39 7.8	14.204
15	21 37 2.93	2.0457	13 34 48.8	13.302	15	23 9 25.31	1.8340	2 24 55.6	14.201
16	21 39 5.48	2.0394	13 21 29.3	13.348	16	23 11 15.28	1.8316	2 10 43.7	14.195
17	21 41 7.66	2.0333	13 8 7.0	13.393	17	23 13 5.11	1.8292	1 56 32.2	14.188
18	21 43 9.48	2.0272	12 54 42.1	13.437	18	23 14 54.79	1.8269	1 42 21.1	14.182
19	21 45 10.93	2.0212	12 41 14.6	13.479	19	23 16 44.34	1.8248	1 28 10.4	14.174
20	21 47 12.02	2.0152	12 27 44.6	13.519	20	23 18 33.77	1.8227	1 14 0.2	14.166
21	21 49 12.75	2.0093	12 14 12.3	13.558	21	23 20 23.07	1.8207	0 59 50.5	14.157
22	21 51 13.13	2.0035	12 0 37.7	13.596	22	23 22 12.25	1.8188	0 45 41.3	14.147
23	21 53 13.17	1.9978	S. 11 47 0.8	13.633	23	23 24 1.32	1.8169	S. 0 31 32.8	14.136
WEDNESDAY 6.					FRIDAY 8.				
0	21 55 12.87	1.9922	S. 11 33 21.7	13.669	0	23 25 50.28	1.8151	S. 0 17 25.0	14.124
1	21 57 12.23	1.9866	11 19 40.5	13.702	1	23 27 39.13	1.8134	S. 0 3 17.9	14.112
2	21 59 11.26	1.9810	11 5 57.4	13.735	2	23 29 27.89	1.8118	N. 0 10 48.5	14.100
3	22 1 9.95	1.9755	10 52 12.3	13.767	3	23 31 16.55	1.8102	0 24 54.1	14.086
4	22 3 8.32	1.9702	10 38 25.3	13.798	4	23 33 5.12	1.8087	0 38 58.8	14.072
5	22 5 6.38	1.9650	10 24 36.5	13.827	5	23 34 53.60	1.8073	0 53 2.7	14.057
6	22 7 4.12	1.9598	10 10 46.0	13.856	6	23 36 42.00	1.8060	1 7 5.7	14.042
7	22 9 1.55	1.9547	9 56 53.8	13.883	7	23 38 30.32	1.8048	1 21 7.7	14.025
8	22 10 58.68	1.9497	9 43 0.0	13.908	8	23 40 18.58	1.8037	1 35 8.7	14.007
9	22 12 55.51	1.9447	9 29 4.8	13.933	9	23 42 6.77	1.8027	1 49 8.6	13.989
10	22 14 52.04	1.9398	9 15 8.1	13.957	10	23 43 54.90	1.8017	2 3 7.4	13.971
11	22 16 48.29	1.9351	9 1 10.0	13.979	11	23 45 42.97	1.8007	2 17 5.1	13.952
12	22 18 44.25	1.9304	8 47 10.6	14.000	12	23 47 30.99	1.7999	2 31 1.6	13.932
13	22 20 39.93	1.9257	8 33 10.0	14.020	13	23 49 18.96	1.7992	2 44 56.9	13.911
14	22 22 35.34	1.9212	8 19 8.2	14.040	14	23 51 6.89	1.7984	2 58 50.9	13.889
15	22 24 30.47	1.9167	8 5 5.2	14.058	15	23 52 54.77	1.7977	3 12 43.6	13.867
16	22 26 25.34	1.9123	7 51 1.2	14.075	16	23 54 42.62	1.7973	3 26 35.0	13.845
17	22 28 19.95	1.9080	7 36 56.2	14.091	17	23 56 30.45	1.7969	3 40 25.0	13.821
18	22 30 14.30	1.9038	7 22 50.3	14.106	18	23 58 18.25	1.7965	3 54 13.5	13.797
19	22 32 8.40	1.8997	7 8 43.5	14.120	19	0 0 6.03	1.7962	4 8 0.6	13.772
20	22 34 2.26	1.8956	6 54 35.9	14.132	20	0 1 53.79	1.7959	4 21 46.2	13.747
21	22 35 55.87	1.8915	6 40 27.6	14.144	21	0 3 41.54	1.7957	4 35 30.2	13.720
22	22 37 49.24	1.8877	6 26 18.6	14.155	22	0 5 29.28	1.7957	4 49 12.6	13.693
23	22 39 42.39	1.8839	6 12 9.0	14.165	23	0 7 17.02	1.7957	5 2 53.4	13.667
24	22 41 35.31	1.8802	S. 5 57 58.8	14.174	24	0 9 4.76	1.7957	N. 5 16 32.6	13.639

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 9.					MONDAY 11.				
0	h m s	s	N. ° ' "	"	0	h m s	s	N. ° ' "	"
0	0 9 4.76	1.7957	5 16 32.6	13.639	0	1 36 43.43	1.8822	15 26 31.2	11.323
1	0 10 52.50	1.7958	5 30 10.1	13.610	1	1 38 36.46	1.8855	15 38 0.8	11.462
2	0 12 40.26	1.7961	5 43 45.8	13.580	2	1 40 29.69	1.8889	15 49 26.7	11.401
3	0 14 28.04	1.7965	5 57 19.7	13.550	3	1 42 23.13	1.8924	16 0 48.9	11.339
4	0 16 15.84	1.7968	6 10 51.8	13.519	4	1 44 16.78	1.8960	16 12 7.3	11.276
5	0 18 3.66	1.7972	6 24 22.0	13.488	5	1 46 10.65	1.8996	16 23 22.0	11.212
6	0 19 51.51	1.7978	6 37 50.4	13.456	6	1 48 4.73	1.9032	16 34 32.8	11.147
7	0 21 39.40	1.7984	6 51 16.8	13.423	7	1 49 59.03	1.9069	16 45 39.7	11.082
8	0 23 27.32	1.7990	7 4 41.2	13.390	8	1 51 53.56	1.9107	16 56 42.7	11.017
9	0 25 15.28	1.7997	7 18 3.6	13.357	9	1 53 48.32	1.9146	17 7 41.8	10.951
10	0 27 3.29	1.8006	7 31 24.0	13.322	10	1 55 43.31	1.9184	17 18 36.8	10.885
11	0 28 51.35	1.8015	7 44 42.3	13.287	11	1 57 38.53	1.9223	17 29 27.7	10.814
12	0 30 39.47	1.8024	7 57 58.4	13.251	12	1 59 33.98	1.9262	17 40 14.5	10.745
13	0 32 27.64	1.8034	8 11 12.4	13.215	13	2 1 29.67	1.9303	17 50 57.1	10.676
14	0 34 15.88	1.8046	8 24 24.2	13.177	14	2 3 25.61	1.9344	18 1 35.6	10.606
15	0 36 4.19	1.8058	8 37 33.7	13.139	15	2 5 21.80	1.9385	18 12 9.8	10.534
16	0 37 52.57	1.8070	8 50 40.9	13.101	16	2 7 18.23	1.9426	18 22 39.7	10.461
17	0 39 41.03	1.8083	9 3 45.8	13.062	17	2 9 14.91	1.9468	18 33 5.2	10.388
18	0 41 29.57	1.8097	9 16 48.4	13.023	18	2 11 11.85	1.9511	18 43 26.3	10.315
19	0 43 18.20	1.8111	9 29 48.6	12.982	19	2 13 9.05	1.9554	18 53 43.0	10.240
20	0 45 6.91	1.8126	9 42 46.3	12.941	20	2 15 6.50	1.9597	19 3 55.1	10.164
21	0 46 55.71	1.8142	9 55 41.5	12.899	21	2 17 4.21	1.9641	19 14 2.7	10.088
22	0 48 44.61	1.8159	10 8 34.2	12.857	22	2 19 2.19	1.9686	19 24 5.7	10.011
23	0 50 33.62	1.8177	N. 10 21 24.3	12.814	23	2 21 0.44	1.9730	N. 19 34 4.0	9.934
SUNDAY 10.					TUESDAY 12.				
0	h m s	s	N. ° ' "	"	0	h m s	s	N. ° ' "	"
0	0 52 22.73	1.8194	N. 10 34 11.9	12.771	0	2 22 58.95	1.9774	N. 19 43 57.7	9.856
1	0 54 11.95	1.8213	10 46 56.9	12.727	1	2 24 57.73	1.9820	19 53 46.7	9.776
2	0 56 1.29	1.8232	10 59 39.1	12.681	2	2 26 56.79	1.9866	20 3 30.8	9.694
3	0 57 50.74	1.8252	11 12 18.6	12.636	3	2 28 56.13	1.9912	20 13 10.0	9.613
4	0 59 40.31	1.8272	11 24 55.4	12.590	4	2 30 55.74	1.9958	20 22 44.3	9.531
5	1 1 30.01	1.8294	11 37 29.4	12.543	5	2 32 55.63	2.0005	20 32 13.7	9.448
6	1 3 19.84	1.8317	11 50 0.6	12.496	6	2 34 55.80	2.0052	20 41 38.1	9.364
7	1 5 9.81	1.8339	12 2 28.9	12.448	7	2 36 56.26	2.0100	20 50 57.4	9.280
8	1 6 59.91	1.8362	12 14 54.3	12.399	8	2 38 57.00	2.0147	21 0 11.7	9.195
9	1 8 50.15	1.8386	12 27 16.8	12.350	9	2 40 58.03	2.0195	21 9 20.8	9.108
10	1 10 40.54	1.8411	12 39 36.3	12.299	10	2 42 59.34	2.0243	21 18 24.6	9.020
11	1 12 31.08	1.8436	12 51 52.7	12.248	11	2 45 0.95	2.0292	21 27 23.2	8.932
12	1 14 21.77	1.8462	13 4 6.0	12.196	12	2 47 2.85	2.0341	21 36 16.5	8.843
13	1 16 12.62	1.8488	13 16 16.2	12.144	13	2 49 5.04	2.0390	21 45 4.4	8.753
14	1 18 3.63	1.8516	13 28 23.3	12.092	14	2 51 7.53	2.0439	21 53 46.9	8.662
15	1 19 54.81	1.8544	13 40 27.2	12.038	15	2 53 10.31	2.0488	22 2 23.9	8.571
16	1 21 46.16	1.8572	13 52 27.8	11.983	16	2 55 13.39	2.0538	22 10 55.4	8.478
17	1 23 37.68	1.8601	14 4 25.1	11.928	17	2 57 16.77	2.0588	22 19 21.3	8.384
18	1 25 29.37	1.8630	14 16 19.2	11.873	18	2 59 20.45	2.0638	22 27 41.5	8.289
19	1 27 21.24	1.8661	14 28 9.9	11.816	19	3 1 24.43	2.0688	22 35 56.0	8.194
20	1 29 13.30	1.8692	14 39 57.1	11.758	20	3 3 28.71	2.0739	22 44 4.8	8.098
21	1 31 5.54	1.8723	14 51 40.9	11.701	21	3 5 33.30	2.0790	22 52 7.8	8.002
22	1 32 57.97	1.8755	15 3 21.2	11.642	22	3 7 38.19	2.0840	23 0 5.0	7.905
23	1 34 50.60	1.8788	15 14 58.0	11.583	23	3 9 43.38	2.0890	23 7 56.2	7.808
24	1 36 43.43	1.8822	N. 15 26 31.2	11.523	24	3 11 48.87	2.0941	N. 23 15 41.4	7.708

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 13.					FRIDAY 15.				
0	h m s	s	N. 23 15 41.4	7.703	0	h m s	s	N. 27 13 8.0	1.860
1	3 11 48.87	2.0941	23 23 20.6	7.603	1	4 57 54.46	2.3122	27 14 55.4	1.719
2	3 13 54.67	2.0992	23 30 53.8	7.502	2	5 0 13.29	2.3154	27 16 34.3	1.578
3	3 16 0.78	2.1043	23 38 20.8	7.399	3	5 2 32.31	2.3186	27 18 4.7	1.436
4	3 18 7.19	2.1093	23 45 41.6	7.295	4	5 4 51.52	2.3217	27 19 26.6	1.292
5	3 20 13.90	2.1144	23 52 56.2	7.191	5	5 7 10.91	2.3247	27 20 39.8	1.149
6	3 22 20.92	2.1196	24 0 4.5	7.086	6	5 9 30.49	2.3277	27 21 44.4	1.005
7	3 24 28.25	2.1247	24 7 6.5	6.979	7	5 11 50.24	2.3305	27 22 40.4	0.860
8	3 26 35.88	2.1297	24 14 2.0	6.871	8	5 14 10.15	2.3333	27 23 27.6	0.714
9	3 28 43.82	2.1348	24 20 51.0	6.763	9	5 16 30.23	2.3360	27 24 6.1	0.569
10	3 30 52.06	2.1398	24 27 33.5	6.654	10	5 18 50.47	2.3386	27 24 35.9	0.423
11	3 33 0.60	2.1449	24 34 9.5	6.544	11	5 21 10.86	2.3410	27 24 56.9	0.277
12	3 35 9.45	2.1500	24 40 38.8	6.433	12	5 23 31.39	2.3433	27 25 9.1	+ 0.130
13	3 37 18.60	2.1551	24 47 1.4	6.321	13	5 25 52.06	2.3456	27 25 12.5	- 0.018
14	3 39 28.06	2.1601	24 53 17.3	6.208	14	5 28 12.87	2.3479	27 25 7.0	0.166
15	3 41 37.81	2.1650	24 59 26.4	6.095	15	5 30 33.81	2.3500	27 24 52.6	0.314
16	3 43 47.86	2.1700	25 5 28.7	5.980	16	5 32 54.87	2.3520	27 24 29.3	0.462
17	3 45 58.21	2.1750	25 11 24.0	5.864	17	5 35 16.05	2.3539	27 23 57.1	0.612
18	3 48 8.86	2.1799	25 17 12.3	5.747	18	5 37 37.34	2.3557	27 23 15.9	0.762
19	3 50 19.80	2.1848	25 22 53.6	5.629	19	5 39 58.74	2.3575	27 22 25.7	0.911
20	3 52 31.03	2.1897	25 28 27.8	5.512	20	5 42 20.24	2.3591	27 21 26.6	1.060
21	3 54 42.56	2.1947	25 33 55.0	5.393	21	5 44 41.83	2.3606	27 20 18.5	1.210
22	3 56 54.39	2.1996	25 39 15.0	5.272	22	5 47 3.51	2.3620	27 19 1.4	1.360
23	3 59 6.51	2.2043	N. 25 44 27.7	5.151	23	5 49 25.27	2.3633	N. 27 17 35.3	1.511
24	4 1 18.91	2.2091				5 51 47.11	2.3646		
THURSDAY 14.					SATURDAY 16.				
0	h m s	s	N. 25 49 33.1	5.029	0	h m s	s	N. 27 16 0.1	1.662
1	4 3 31.60	2.2139	25 54 31.2	4.907	1	5 54 9.02	2.3657	27 14 15.9	1.813
2	4 5 44.58	2.2186	25 59 21.9	4.783	2	5 56 30.99	2.3667	27 12 22.6	1.964
3	4 7 57.83	2.2232	26 4 5.2	4.659	3	5 58 53.02	2.3677	27 10 20.2	2.116
4	4 10 11.36	2.2278	26 8 41.0	4.534	4	6 1 15.11	2.3685	27 8 8.7	2.267
5	4 12 25.17	2.2324	26 13 9.3	4.407	5	6 3 37.24	2.3692	27 5 48.1	2.418
6	4 14 39.25	2.2369	26 17 29.9	4.280	6	6 5 59.41	2.3697	27 3 18.5	2.569
7	4 16 53.60	2.2414	26 21 42.9	4.152	7	6 8 21.61	2.3702	27 0 39.8	2.721
8	4 19 8.22	2.2458	26 25 48.2	4.024	8	6 10 43.84	2.3707	26 57 51.9	2.873
9	4 21 23.10	2.2502	26 29 45.8	3.895	9	6 13 6.09	2.3710	26 54 55.0	3.024
10	4 23 38.25	2.2546	26 33 35.6	3.764	10	6 15 28.36	2.3712	26 51 49.0	3.176
11	4 25 53.66	2.2589	26 37 17.5	3.633	11	6 17 50.64	2.3713	26 48 33.9	3.327
12	4 28 9.32	2.2631	26 40 51.5	3.501	12	6 20 12.92	2.3713	26 45 9.7	3.479
13	4 30 25.23	2.2673	26 44 17.6	3.368	13	6 22 35.20	2.3712	26 41 36.4	3.631
14	4 32 41.39	2.2714	26 47 35.7	3.235	14	6 24 57.47	2.3710	26 37 54.0	3.782
15	4 34 57.80	2.2755	26 50 45.8	3.102	15	6 27 19.72	2.3707	26 34 2.6	3.932
16	4 37 14.45	2.2794	26 53 47.9	2.967	16	6 29 41.95	2.3702	26 30 2.1	4.083
17	4 39 31.33	2.2833	26 56 41.8	2.830	17	6 32 4.15	2.3698	26 25 52.6	4.234
18	4 41 48.45	2.2872	26 59 27.5	2.694	18	6 34 26.33	2.3693	26 21 34.0	4.385
19	4 44 5.80	2.2911	27 2 5.0	2.557	19	6 36 48.47	2.3686	26 17 6.4	4.535
20	4 46 23.38	2.2947	27 4 34.3	2.419	20	6 39 10.56	2.3678	26 12 29.8	4.685
21	4 48 41.17	2.2983	27 6 55.3	2.280	21	6 41 32.61	2.3670	26 7 44.2	4.835
22	4 50 59.18	2.3019	27 9 7.9	2.141	22	6 43 54.60	2.3660	26 2 49.6	4.985
23	4 53 17.40	2.3054	27 11 12.2	2.001	23	6 46 16.53	2.3650	25 57 46.0	5.134
24	4 55 35.83	2.3088	N. 27 13 8.0	1.860	24	6 48 38.40	2.3638		
	4 57 54.46	2.3122				6 51 0.19	2.3625	N. 25 52 33.5	5.282

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 17.					TUESDAY 19.				
0	h m s	s	N. 25 52 33.5	5.282	0	h m s	s	N. 18 59 5.3	11.628
1	6 51 0.19	2.3625	25 47 12.1	5.431	1	8 43 54.30	2.2273	18 47 24.5	11.734
2	6 53 21.90	2.3612	25 41 41.8	5.579	2	8 46 7.84	2.2239	18 35 37.2	11.842
3	6 55 43.54	2.3599	25 36 2.6	5.727	3	8 48 21.17	2.2204	18 23 43.5	11.948
4	6 58 5.09	2.3584	25 30 14.6	5.874	4	8 50 34.29	2.2169	18 11 43.4	12.053
5	7 0 26.55	2.3568	25 24 17.8	6.021	5	8 52 47.20	2.2134	17 59 37.1	12.157
6	7 2 47.91	2.3552	25 18 12.1	6.167	6	8 54 59.90	2.2099	17 47 24.6	12.260
7	7 5 9.17	2.3534	25 11 57.7	6.312	7	8 57 12.39	2.2065	17 35 5.9	12.362
8	7 7 30.32	2.3516	25 5 34.6	6.458	8	8 59 24.68	2.2031	17 22 41.2	12.461
9	7 9 51.36	2.3497	24 59 2.7	6.603	9	9 1 36.76	2.1997	17 10 10.6	12.559
10	7 12 12.29	2.3478	24 52 22.2	6.747	10	9 3 48.64	2.1963	16 57 34.1	12.657
11	7 14 33.10	2.3457	24 45 33.1	6.890	11	9 6 0.32	2.1929	16 44 51.7	12.754
12	7 16 53.78	2.3436	24 38 35.4	7.033	12	9 8 11.79	2.1895	16 32 3.6	12.849
13	7 19 14.33	2.3414	24 31 29.1	7.176	13	9 10 23.06	2.1862	16 19 9.8	12.943
14	7 21 34.75	2.3392	24 24 14.3	7.317	14	9 12 34.13	2.1829	16 6 10.4	13.036
15	7 23 55.03	2.3368	24 16 51.0	7.458	15	9 14 45.01	2.1796	15 53 5.5	13.127
16	7 26 15.17	2.3344	24 9 19.3	7.598	16	9 16 55.69	2.1763	15 39 55.2	13.217
17	7 28 35.16	2.3319	24 1 39.2	7.738	17	9 19 6.17	2.1730	15 26 39.4	13.307
18	7 30 55.00	2.3294	23 53 50.7	7.877	18	9 21 16.45	2.1698	15 13 18.3	13.395
19	7 33 14.69	2.3268	23 45 53.9	8.015	19	9 23 26.54	2.1666	14 59 52.0	13.481
20	7 35 34.23	2.3242	23 37 48.9	8.153	20	9 25 36.45	2.1636	14 46 20.6	13.565
21	7 37 53.60	2.3215	23 29 35.6	8.290	21	9 27 46.17	2.1604	14 32 44.2	13.648
22	7 40 12.81	2.3187	23 21 14.1	8.426	22	9 29 55.70	2.1573	14 19 2.8	13.731
23	7 42 31.85	2.3159	N. 23 12 44.5	8.560	23	9 32 5.05	2.1543	N. 14 5 16.5	13.812
24	7 44 50.72	2.3131							
MONDAY 18.					WEDNESDAY 20.				
0	7 47 9.42	2.3102	N. 23 4 6.9	8.694	0	9 34 14.22	2.1513	N. 13 51 25.4	13.892
1	7 49 27.95	2.3072	22 55 21.3	8.828	1	9 36 23.21	2.1483	13 37 29.5	13.970
2	7 51 46.29	2.3042	22 46 27.6	8.961	2	9 38 32.02	2.1454	13 23 29.0	14.047
3	7 54 4.45	2.3012	22 37 26.0	9.092	3	9 40 40.66	2.1426	13 9 23.9	14.122
4	7 56 22.43	2.2981	22 28 16.5	9.223	4	9 42 49.13	2.1397	12 55 14.3	14.197
5	7 58 40.22	2.2950	22 18 59.2	9.352	5	9 44 57.43	2.1369	12 41 0.2	14.271
6	8 0 57.83	2.2919	22 9 34.2	9.481	6	9 47 5.56	2.1342	12 26 41.8	14.342
7	8 3 15.25	2.2887	22 0 1.5	9.609	7	9 49 13.53	2.1315	12 12 19.1	14.412
8	8 5 32.47	2.2854	21 50 21.1	9.737	8	9 51 21.34	2.1288	11 57 52.3	14.481
9	8 7 49.49	2.2821	21 40 33.1	9.863	9	9 53 28.99	2.1262	11 43 21.4	14.549
10	8 10 6.32	2.2788	21 30 37.6	9.987	10	9 55 36.49	2.1237	11 28 46.4	14.616
11	8 12 22.95	2.2755	21 20 34.7	10.110	11	9 57 43.84	2.1212	11 14 7.5	14.680
12	8 14 39.38	2.2722	21 10 24.4	10.233	12	9 59 51.03	2.1187	10 59 24.8	14.743
13	8 16 55.61	2.2688	21 0 6.7	10.356	13	10 1 58.08	2.1164	10 44 38.3	14.806
14	8 19 11.64	2.2654	20 49 41.7	10.477	14	10 4 4.99	2.1141	10 29 48.1	14.867
15	8 21 27.46	2.2620	20 39 9.5	10.596	15	10 6 11.77	2.1118	10 14 54.3	14.926
16	8 23 43.08	2.2586	20 28 30.2	10.715	16	10 8 18.41	2.1096	9 59 57.0	14.984
17	8 25 58.49	2.2552	20 17 43.7	10.833	17	10 10 24.92	2.1073	9 44 56.2	15.041
18	8 28 13.70	2.2517	20 6 50.2	10.950	18	10 12 31.29	2.1052	9 29 52.1	15.096
19	8 30 28.70	2.2482	19 55 49.7	11.066	19	10 14 37.54	2.1032	9 14 44.7	15.150
20	8 32 43.49	2.2447	19 44 42.3	11.179	20	10 16 43.68	2.1013	8 59 34.1	15.203
21	8 34 58.07	2.2412	19 33 28.2	11.292	21	10 18 49.70	2.0993	8 44 20.3	15.255
22	8 37 12.44	2.2378	19 22 7.3	11.405	22	10 20 55.60	2.0975	8 29 3.5	15.304
23	8 39 26.61	2.2343	19 10 39.6	11.517	23	10 23 1.40	2.0957	8 13 43.8	15.352
24	8 41 40.56	2.2308	N. 18 59 5.3	11.626	24	10 25 7.09	2.0940	N. 7 58 21.3	15.399

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 21.					SATURDAY 23.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
1	10 25 7.09	2.0940	N. 7 58 21.3	15.399	1	12 5 0.65	2.0980	S. 4 48 31.8	16.013
2	10 27 12.68	2.0923	7 42 56.0	15.443	2	12 7 6.59	2.1001	5 4 31.9	15.991
3	10 29 18.17	2.0907	7 27 27.9	15.490	3	12 9 12.66	2.1022	5 20 30.7	15.968
4	10 31 23.56	2.0892	7 11 57.2	15.533	4	12 11 18.86	2.1044	5 36 28.0	15.943
5	10 33 28.87	2.0877	6 56 24.0	15.574	5	12 13 25.19	2.1067	5 52 23.8	15.917
6	10 35 34.09	2.0863	6 40 48.3	15.614	6	12 15 31.66	2.1091	6 8 18.0	15.888
7	10 37 39.23	2.0850	6 25 10.3	15.652	7	12 17 38.28	2.1116	6 24 10.4	15.858
8	10 39 44.29	2.0838	6 9 30.0	15.690	8	12 19 45.05	2.1141	6 40 1.0	15.828
9	10 41 49.28	2.0826	5 53 47.5	15.726	9	12 21 51.97	2.1167	6 55 49.7	15.796
10	10 43 54.20	2.0814	5 38 2.9	15.761	10	12 23 59.05	2.1193	7 11 36.5	15.762
11	10 45 59.05	2.0804	5 22 16.2	15.794	11	12 26 6.29	2.1221	7 27 21.2	15.727
12	10 48 3.85	2.0795	5 6 27.6	15.825	12	12 28 13.70	2.1250	7 43 3.7	15.690
13	10 50 8.59	2.0786	4 50 37.2	15.855	13	12 30 21.29	2.1280	7 58 44.0	15.652
14	10 52 13.28	2.0777	4 34 45.0	15.885	14	12 32 29.06	2.1310	8 14 22.0	15.612
15	10 54 17.92	2.0770	4 18 51.0	15.913	15	12 34 37.01	2.1340	8 29 57.5	15.571
16	10 56 22.52	2.0763	4 2 55.4	15.939	16	12 36 45.14	2.1371	8 45 30.5	15.528
17	10 58 27.08	2.0757	3 46 58.3	15.963	17	12 38 53.46	2.1403	9 1 0.9	15.485
18	11 0 31.60	2.0751	3 30 59.8	15.987	18	12 41 1.98	2.1437	9 16 28.7	15.440
19	11 2 36.09	2.0747	3 14 59.9	16.009	19	12 43 10.71	2.1472	9 31 53.7	15.393
20	11 4 40.56	2.0743	2 58 58.7	16.030	20	12 45 19.64	2.1506	9 47 15.8	15.344
21	11 6 45.01	2.0740	2 42 56.3	16.048	21	12 47 28.78	2.1542	10 2 35.0	15.294
22	11 8 49.44	2.0738	2 26 52.9	16.066	22	12 49 38.14	2.1578	10 17 51.1	15.242
23	11 10 53.86	2.0737	2 10 48.4	16.083	23	12 51 47.72	2.1615	10 33 4.1	15.189
24	11 12 58.28	2.0736	N. 1 54 42.9	16.098	24	12 53 57.52	2.1652	S. 10 48 13.8	15.134
FRIDAY 22.					SUNDAY 24.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
1	11 15 2.69	2.0736	N. 1 38 36.6	16.112	1	12 56 7.54	2.1690	S. 11 3 20.2	15.078
2	11 17 7.11	2.0737	1 22 29.5	16.124	2	12 58 17.80	2.1730	11 18 23.2	15.021
3	11 19 11.54	2.0738	1 6 21.7	16.135	3	1 0 28.30	2.1770	11 33 22.7	14.962
4	11 21 15.97	2.0740	0 50 13.3	16.144	4	1 2 39.04	2.1811	11 48 18.7	14.902
5	11 23 20.42	2.0744	0 34 4.4	16.152	5	1 4 50.03	2.1852	12 3 11.0	14.840
6	11 25 24.90	2.0749	0 17 55.1	16.158	6	1 7 1.26	2.1893	12 17 59.5	14.777
7	11 27 29.41	2.0754	N. 0 1 45.4	16.164	7	1 9 12.74	2.1935	12 32 44.1	14.711
8	11 29 33.95	2.0759	S. 0 14 24.6	16.167	8	1 11 24.48	2.1979	12 47 24.8	14.644
9	11 31 38.52	2.0765	0 30 34.7	16.169	9	1 13 36.49	2.2023	13 2 1.4	14.576
10	11 33 43.13	2.0772	0 46 44.9	16.170	10	1 15 48.76	2.2067	13 16 33.9	14.506
11	11 35 47.79	2.0781	1 2 55.1	16.170	11	1 18 1.30	2.2113	13 31 2.1	14.434
12	11 37 52.50	2.0790	1 19 5.3	16.168	12	1 20 14.12	2.2159	13 45 26.0	14.362
13	11 39 57.27	2.0800	1 35 15.3	16.165	13	1 22 27.21	2.2205	13 59 45.5	14.288
14	11 42 2.10	2.0811	1 51 25.1	16.160	14	1 24 40.58	2.2253	14 14 0.5	14.212
15	11 44 7.00	2.0822	2 7 34.5	16.153	15	1 26 54.24	2.2301	14 28 10.9	14.134
16	11 46 11.96	2.0833	2 23 43.5	16.146	16	1 29 8.19	2.2349	14 42 16.6	14.055
17	11 48 17.00	2.0847	2 39 52.0	16.137	17	1 31 22.42	2.2397	14 56 17.5	13.974
18	11 50 22.12	2.0861	2 55 59.9	16.127	18	1 33 36.95	2.2447	15 10 13.5	13.892
19	11 52 27.33	2.0876	3 12 7.2	16.115	19	1 35 51.78	2.2497	15 24 4.5	13.808
20	11 54 32.63	2.0892	3 28 13.7	16.102	20	1 38 6.91	2.2547	15 37 50.5	13.723
21	11 56 38.03	2.0908	3 44 19.4	16.087	21	1 40 22.34	2.2598	15 51 31.3	13.636
22	11 58 43.52	2.0924	4 0 24.1	16.070	22	1 42 38.08	2.2649	16 5 6.8	13.547
23	12 0 49.12	2.0942	4 16 27.8	16.052	23	1 44 54.13	2.2702	16 18 36.9	13.457
24	12 2 54.83	2.0961	4 32 30.4	16.033	24	1 47 10.50	2.2754	16 32 1.6	13.366
	12 5 0.65	2.0980	S. 4 48 31.8	16.013		1 49 27.18	2.2807	S. 16 45 20.8	13.272

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 25.					WEDNESDAY 27.				
0	13 49 27.18	2.2807	S. 16 45 20.8	13.472	0	15 45 19.55	2.5414	S. 25 5 45.8	7.023
1	13 51 44.18	2.2860	16 58 34.3	13.177	1	15 47 52.17	2.5459	25 12 41.8	6.851
2	13 54 1.50	2.2913	17 11 42.1	13.082	2	15 50 25.06	2.5503	25 19 27.9	6.686
3	13 56 19.14	2.2967	17 24 44.1	12.984	3	15 52 58.21	2.5546	25 26 4.1	6.580
4	13 58 37.11	2.3022	17 37 40.2	12.884	4	15 55 31.61	2.5587	25 32 30.3	6.352
5	14 0 55.40	2.3076	17 50 30.2	12.783	5	15 58 5.25	2.5628	25 38 46.4	6.184
6	14 3 14.02	2.3131	18 3 14.1	12.681	6	16 0 39.14	2.5668	25 44 52.4	6.015
7	14 5 32.97	2.3187	18 15 51.9	12.577	7	16 3 13.27	2.5707	25 50 48.2	5.845
8	14 7 52.26	2.3242	18 28 23.3	12.470	8	16 5 47.62	2.5744	25 56 33.8	5.674
9	14 10 11.88	2.3298	18 40 48.3	12.362	9	16 8 22.19	2.5780	26 2 9.1	5.502
10	14 12 31.84	2.3355	18 53 6.8	12.254	10	16 10 56.98	2.5815	26 7 34.0	5.389
11	14 14 52.14	2.3411	19 5 18.8	12.144	11	16 13 31.97	2.5848	26 12 48.5	5.255
12	14 17 12.77	2.3467	19 17 24.1	12.032	12	16 16 7.16	2.5881	26 17 52.6	4.981
13	14 19 33.74	2.3524	19 29 22.6	11.918	13	16 18 42.55	2.5913	26 22 46.2	4.805
14	14 21 55.06	2.3581	19 41 14.3	11.803	14	16 21 18.12	2.5945	26 27 29.2	4.629
15	14 24 16.72	2.3638	19 52 59.0	11.687	15	16 23 53.87	2.5978	26 32 1.6	4.452
16	14 26 38.72	2.3696	20 4 36.7	11.568	16	16 26 29.79	2.6000	26 36 23.4	4.274
17	14 29 1.07	2.3753	20 16 7.2	11.448	17	16 29 5.87	2.6027	26 40 34.5	4.095
18	14 31 23.76	2.3811	20 27 30.5	11.327	18	16 31 42.11	2.6052	26 44 34.8	3.916
19	14 33 46.80	2.3868	20 38 46.5	11.204	19	16 34 18.49	2.6075	26 48 24.4	3.737
20	14 36 10.18	2.3925	20 49 55.0	11.079	20	16 36 55.01	2.6097	26 52 3.2	3.556
21	14 38 33.90	2.3982	21 0 56.0	10.953	21	16 39 31.66	2.6118	26 55 31.1	3.375
22	14 40 57.97	2.4040	21 11 49.4	10.827	22	16 42 8.43	2.6137	26 58 48.2	3.194
23	14 43 22.38	2.4097	S. 21 22 35.2	10.698	23	16 44 45.31	2.6156	S. 27 1 54.4	3.022
TUESDAY 26.					THURSDAY 28.				
0	14 45 47.13	2.4154	S. 21 33 13.2	10.567	0	16 47 22.30	2.6172	S. 27 4 49.7	2.850
1	14 48 12.22	2.4211	21 43 43.3	10.435	1	16 49 59.38	2.6187	27 7 34.0	2.647
2	14 50 37.66	2.4268	21 54 5.4	10.302	2	16 52 36.55	2.6201	27 10 7.4	2.465
3	14 53 3.44	2.4325	22 4 19.5	10.167	3	16 55 13.79	2.6218	27 12 29.8	2.282
4	14 55 29.56	2.4382	22 14 25.5	10.031	4	16 57 51.10	2.6232	27 14 41.2	2.098
5	14 57 56.02	2.4438	22 24 23.2	9.893	5	17 0 28.47	2.6242	27 16 41.5	1.914
6	15 0 22.81	2.4493	22 34 12.6	9.753	6	17 3 5.88	2.6239	27 18 30.8	1.730
7	15 2 49.94	2.4549	22 43 53.6	9.613	7	17 5 43.33	2.6245	27 20 9.1	1.546
8	15 5 17.40	2.4603	22 53 26.1	9.471	8	17 8 20.82	2.6250	27 21 36.3	1.361
9	15 7 45.18	2.4658	23 2 50.1	9.327	9	17 10 58.33	2.6252	27 22 52.4	1.176
10	15 10 13.29	2.4713	23 12 5.4	9.182	10	17 13 35.84	2.6252	27 23 57.4	0.992
11	15 12 41.73	2.4767	23 21 12.0	9.036	11	17 16 13.36	2.6252	27 24 51.4	0.807
12	15 15 10.49	2.4820	23 30 9.7	8.888	12	17 18 50.87	2.6250	27 25 34.3	0.622
13	15 17 39.57	2.4873	23 38 58.5	8.739	13	17 21 28.36	2.6247	27 26 6.1	0.437
14	15 20 8.97	2.4926	23 47 38.4	8.589	14	17 24 5.83	2.6242	27 26 26.8	0.253
15	15 22 38.68	2.4977	23 56 9.2	8.437	15	17 26 43.26	2.6234	27 26 36.5	- 0.069
16	15 25 8.70	2.5029	24 4 30.9	8.284	16	17 29 20.64	2.6226	27 26 35.1	+ 0.115
17	15 27 39.03	2.5080	24 12 43.3	8.129	17	17 31 57.97	2.6216	27 26 22.7	0.298
18	15 30 9.66	2.5130	24 20 46.4	7.974	18	17 34 35.23	2.6203	27 25 59.3	0.482
19	15 32 40.59	2.5179	24 28 40.2	7.817	19	17 37 12.41	2.6190	27 25 24.8	0.666
20	15 35 11.81	2.5228	24 36 24.5	7.659	20	17 39 49.51	2.6176	27 24 39.3	0.849
21	15 37 43.32	2.5276	24 43 59.3	7.500	21	17 42 26.52	2.6159	27 23 42.9	1.032
22	15 40 15.12	2.5323	24 51 24.5	7.339	22	17 45 3.42	2.6141	27 22 35.5	1.215
23	15 42 47.20	2.5369	24 58 40.0	7.177	23	17 47 40.21	2.6122	27 21 17.1	1.397
24	15 45 19.55	2.5414	S. 25 5 45.8	7.015	24	17 50 16.88	2.6101	S. 27 19 47.8	1.578

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 29.					SUNDAY 31.				
0	17 50 16.88	2.6101	S. 27 19 47.8	1.578	0	19 50 38.32	2.5668	S. 22 51 25.4	9.143
1	17 52 53.42	2.6078	27 18 7.7	1.759	1	19 53 0.12	2.5598	22 42 13.0	9.268
2	17 55 29.82	2.6053	27 16 16.7	1.940	2	19 55 21.50	2.5529	22 32 53.2	9.391
3	17 58 6.06	2.6027	27 14 14.9	2.120	3	19 57 42.47	2.5460	22 23 26.1	9.512
4	18 0 42.14	2.6000	27 12 2.3	2.299	4	20 0 3.02	2.5391	22 13 51.7	9.632
5	18 3 18.06	2.5974	27 9 39.0	2.478	5	20 2 23.16	2.5322	22 4 10.2	9.750
6	18 5 53.80	2.5941	27 7 4.9	2.656	6	20 4 42.88	2.5252	21 54 21.7	9.867
7	18 8 29.35	2.5909	27 4 20.2	2.833	7	20 7 2.18	2.5182	21 44 26.2	9.982
8	18 11 4.71	2.5877	27 1 24.9	3.010	8	20 9 21.06	2.5111	21 34 23.9	10.094
9	18 13 39.87	2.5842	26 58 19.0	3.186	9	20 11 39.51	2.5040	21 24 14.9	10.206
10	18 16 14.82	2.5807	26 55 2.6	3.361	10	20 13 57.54	2.4970	21 13 59.2	10.316
11	18 18 49.55	2.5769	26 51 35.7	3.535	11	20 16 15.15	2.4900	21 3 37.0	10.424
12	18 21 24.05	2.5731	26 47 58.4	3.708	12	20 18 32.34	2.4830	20 53 8.3	10.531
13	18 23 58.32	2.5691	26 44 10.7	3.881	13	20 20 49.11	2.4760	20 42 33.3	10.636
14	18 26 32.34	2.5649	26 40 12.7	4.052	14	20 23 5.46	2.4689	20 31 52.0	10.740
15	18 29 6.11	2.5605	26 36 4.5	4.222	15	20 25 21.38	2.4618	20 21 4.5	10.842
16	18 31 39.62	2.5562	26 31 46.1	4.392	16	20 27 36.88	2.4548	20 10 11.0	10.942
17	18 34 12.86	2.5517	26 27 17.5	4.560	17	20 29 51.96	2.4479	19 59 11.5	11.040
18	18 36 45.83	2.5472	26 22 38.9	4.727	18	20 32 6.63	2.4410	19 48 6.2	11.137
19	18 39 18.52	2.5424	26 17 50.3	4.893	19	20 34 20.88	2.4340	19 36 55.1	11.233
20	18 41 50.92	2.5376	26 12 51.7	5.059	20	20 36 34.71	2.4271	19 25 38.3	11.326
21	18 44 23.03	2.5326	26 7 43.2	5.223	21	20 38 48.13	2.4202	19 14 16.0	11.418
22	18 46 54.83	2.5275	26 2 24.9	5.386	22	20 41 1.14	2.4133	19 2 48.2	11.508
23	18 49 26.33	2.5223	S. 25 56 56.9	5.547	23	20 43 13.73	2.4064	S. 18 51 15.0	11.596
SATURDAY 30.					MONDAY, FEBRUARY 1.				
0	18 51 57.51	2.5170	S. 25 51 19.3	5.707	0	20 45 25.91	2.3996	S. 18 39 36.4	11.686
1	18 54 28.37	2.5117	25 45 32.1	5.867	PHASES OF THE MOON.				
2	18 56 58.91	2.5062	25 39 35.3	6.025					
3	18 59 29.11	2.5005	25 33 29.1	6.182					
4	19 1 58.97	2.4948	25 27 13.5	6.337					
5	19 4 28.49	2.4891	25 20 48.6	6.491	☾ New Moon Jan. 2 18 3.4				
6	19 6 57.67	2.4833	25 14 14.6	6.643					
7	19 9 26.49	2.4773	25 7 31.5	6.794					
8	19 11 54.95	2.4713	25 0 39.3	6.945					
9	19 14 23.05	2.4652	24 53 38.1	7.094	☾ First Quarter 10 9 45.8				
10	19 16 50.78	2.4591	24 46 28.0	7.241					
11	19 19 18.14	2.4528	24 39 9.2	7.386					
12	19 21 45.12	2.4465	24 31 41.7	7.530					
13	19 24 11.72	2.4402	24 24 5.6	7.673	☾ Full Moon 18 8 16.9				
14	19 26 37.94	2.4337	24 16 20.9	7.815					
15	19 29 3.77	2.4272	24 8 27.8	7.954					
16	19 31 29.21	2.4207	24 0 26.4	8.092					
17	19 33 54.26	2.4142	23 52 16.7	8.230	☾ Apogee Jan. 11 8.3				
18	19 36 18.91	2.4075	23 43 58.8	8.366					
19	19 38 43.16	2.4008	23 35 32.8	8.499					
20	19 41 7.01	2.3941	23 26 58.9	8.631					
21	19 43 30.45	2.3873	23 18 17.1	8.762	☾ Perigee 25 3.0				
22	19 45 53.48	2.3804	23 9 27.5	8.891					
23	19 48 16.10	2.3736	23 0 30.2	9.018					
24	19 50 38.32	2.3668	S. 22 51 25.4	9.143					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
4	SUN W.	16 3 3	2849	17 36 27	2855	19 9 43	2863	20 42 49	2873
	α Pegasi E.	54 41 48	2729	53 5 46	2756	51 30 21	2785	49 55 33	2815
	α Arietis E.	95 55 2	2467	94 13 2	2481	92 31 22	2496	90 50 3	2510
5	SUN W.	28 24 39	2939	29 56 9	2954	31 27 20	2969	32 58 12	2985
	α Arietis E.	82 28 38	2587	80 49 25	2602	79 10 33	2618	77 32 3	2634
	Aldebaran E.	114 19 55	2655	112 42 14	2669	111 4 52	2682	109 27 48	2697
6	SUN W.	40 27 37	3064	41 56 31	3080	43 25 5	3096	44 53 20	3112
	α Arietis E.	69 24 54	2714	67 48 33	2729	66 12 32	2745	64 36 52	2761
	Aldebaran E.	101 27 16	2769	99 52 7	2784	98 17 18	2798	96 42 48	2813
	MARS E.	105 10 45	2654	103 33 3	2669	101 55 42	2685	100 18 42	2701
7	SUN W.	52 9 45	3190	53 36 6	3204	55 2 10	3220	56 27 56	3234
	α Arietis E.	56 43 39	2838	55 10 1	2852	53 36 41	2867	52 3 40	2882
	Aldebaran E.	88 55 4	2886	87 22 27	2901	85 50 9	2914	84 18 8	2928
	MARS E.	92 18 52	2777	90 43 54	2791	89 9 14	2805	87 34 53	2820
8	SUN W.	63 32 38	3302	64 56 47	3313	66 20 43	3325	67 44 25	3338
	VENUS W.	20 46 37	3394	22 9 0	3403	23 31 13	3412	24 53 16	3421
	α Arietis E.	44 23 11	2953	42 51 59	2965	41 21 3	2979	39 50 24	2992
	Aldebaran E.	76 42 24	2995	75 12 5	3008	73 42 2	3020	72 12 14	3032
	MARS E.	79 47 35	2885	78 14 57	2898	76 42 35	2909	75 10 27	2920
9	SUN W.	74 39 42	3389	76 2 11	3398	77 24 30	3407	78 46 39	3415
	Fomalhaut W.	39 58 10	3929	41 11 0	3884	42 24 36	3843	43 38 54	3805
	VENUS W.	31 41 2	3465	33 2 7	3471	34 23 3	3479	35 43 51	3486
	Aldebaran E.	64 46 53	3089	63 18 30	3100	61 50 20	3110	60 22 22	3120
	MARS E.	67 33 16	2971	66 2 27	2980	64 31 49	2989	63 1 22	2997
	Pollux E.	106 58 32	3016	105 28 39	3025	103 58 57	3032	102 29 24	3039
10	SUN W.	85 35 22	3446	86 56 46	3451	88 18 5	3455	89 39 19	3459
	Fomalhaut W.	49 58 51	3669	51 16 11	3648	52 33 54	3629	53 51 57	3610
	VENUS W.	42 26 1	3515	43 46 9	3519	45 6 12	3523	46 26 11	3525
	Aldebaran E.	53 5 35	3168	51 38 48	3178	50 12 12	3187	48 45 47	3195
	MARS E.	55 31 24	3029	54 1 47	3034	52 32 17	3039	51 2 53	3043
	Pollux E.	95 3 41	3069	93 34 53	3073	92 6 10	3077	90 37 32	3080
11	SUN W.	96 24 40	3469	97 45 39	3470	99 6 37	3470	100 27 35	3469
	Fomalhaut W.	60 26 36	3539	61 46 17	3526	63 6 12	3515	64 26 19	3504
	VENUS W.	53 5 24	3535	54 25 10	3535	55 44 55	3535	57 4 41	3534
	α Pegasi W.	37 52 58	3565	39 12 11	3535	40 31 56	3508	41 52 11	3484
	Aldebaran E.	41 36 27	3245	40 11 11	3255	38 46 7	3267	37 21 17	3280
	MARS E.	43 36 57	3057	42 7 55	3058	40 38 54	3060	39 9 55	3060
	Pollux E.	83 15 12	3090	81 46 50	3091	80 18 29	3091	78 50 8	3090
12	SUN W.	107 12 49	3458	108 34 0	3454	109 55 16	3450	111 16 36	3445
	Fomalhaut W.	71 9 57	3452	72 31 15	3443	73 52 43	3433	75 14 22	3423
	VENUS W.	63 43 59	3521	65 4 0	3516	66 24 6	3513	67 44 16	3507
	α Pegasi W.	48 39 43	3383	50 2 19	3366	51 25 14	3350	52 48 28	3334
	Pollux E.	71 28 3	3081	69 59 30	3078	68 30 54	3074	67 2 13	3071
	Regulus E.	108 22 44	3068	106 53 55	3065	105 25 2	3060	103 56 4	3056

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
4	SUN	W.	22 15 43	2824	23 48 22	2897	25 20 45	2920	26 52 51	2924
	α Pegasi	E.	48 21 25	2847	46 47 58	2881	45 15 15	2917	43 43 18	2937
	α Arietis	E.	89 9 4	2325	87 28 26	2340	85 48 9	2356	84 8 13	2371
5	SUN	W.	34 28 44	3000	35 58 57	3016	37 28 50	3022	38 58 23	3047
	α Arietis	E.	75 53 54	2690	74 16 7	2666	72 38 41	2682	71 1 37	2698
	Aldebaran	E.	107 51 4	2710	106 14 38	2725	104 38 32	2739	103 2 44	2754
6	SUN	W.	46 21 15	3128	47 48 51	3143	49 16 8	3159	50 43 6	3175
	α Arietis	E.	63 1 33	2777	61 26 35	2792	59 51 56	2807	58 17 37	2823
	Aldebaran	E.	95 8 37	2828	93 34 46	2842	92 1 13	2857	90 27 59	2872
	MARS	E.	98 42 3	2716	97 5 45	2732	95 29 47	2747	93 54 10	2762
7	SUN	W.	57 53 25	3248	59 18 37	3262	60 43 33	3276	62 8 13	3288
	α Arietis	E.	50 30 58	2897	48 58 35	2910	47 26 29	2924	45 54 41	2939
	Aldebaran	E.	82 46 25	2942	81 14 59	2956	79 43 51	2969	78 12 59	2982
	MARS	E.	86 0 51	2833	84 27 6	2847	82 53 39	2860	81 20 29	2875
8	SUN	W.	69 7 53	3349	70 31 8	3359	71 54 11	3370	73 17 2	3379
	VENUS	W.	26 15 9	3430	27 36 52	3438	28 58 25	3447	30 19 48	3455
	α Arietis	E.	38 20 1	3005	36 49 54	3018	35 20 4	3031	33 50 30	3044
	Aldebaran	E.	70 42 41	3044	69 13 23	3056	67 44 19	3067	66 15 29	3078
	MARS	E.	73 38 34	2951	72 6 55	2962	70 35 29	2972	69 4 16	2982
9	SUN	W.	80 8 39	3422	81 30 31	3429	82 52 15	3435	84 13 52	3441
	Fomalhaut	W.	44 53 51	3772	46 9 22	3743	47 25 24	3716	48 41 54	3691
	VENUS	W.	37 4 31	3493	38 25 3	3498	39 45 29	3505	41 5 48	3510
	Aldebaran	E.	58 54 37	3130	57 27 4	3140	55 59 43	3149	54 32 33	3159
	MARS	E.	61 31 5	3004	60 0 57	3011	58 30 58	3018	57 1 7	3024
	Pollux	E.	101 0 0	3046	99 30 44	3052	98 1 36	3058	96 32 35	3064
10	SUN	W.	91 0 29	3465	92 21 35	3465	93 42 39	3467	95 3 40	3468
	Fomalhaut	W.	55 10 20	3595	56 29 0	3579	57 47 57	3565	59 7 9	3552
	VENUS	W.	47 46 7	3529	49 5 59	3531	50 25 49	3533	51 45 37	3534
	Aldebaran	E.	47 19 32	3204	45 53 28	3214	44 27 36	3224	43 1 55	3235
	MARS	E.	49 33 34	3047	48 4 20	3050	46 35 9	3053	45 6 2	3055
	Pollux	E.	89 8 58	3082	87 40 27	3085	86 12 0	3087	84 43 35	3089
11	SUN	W.	101 48 34	3468	103 9 34	3466	104 30 36	3463	105 51 41	3462
	Fomalhaut	W.	65 46 39	3493	67 7 11	3482	68 27 55	3472	69 48 50	3462
	VENUS	W.	58 24 28	3532	59 44 17	3530	61 4 8	3527	62 24 2	3525
	α Pegasi	W.	43 12 53	3461	44 34 1	3439	45 55 33	3420	47 17 27	3400
	Aldebaran	E.	35 56 42	3294	34 32 23	3310	33 8 23	3327	31 44 43	3347
	MARS	E.	37 40 56	3060	36 11 57	3059	34 42 57	3058	33 13 56	3057
	Pollux	E.	77 21 46	3089	75 53 23	3088	74 24 59	3086	72 56 32	3084
12	SUN	W.	112 38 2	3439	113 59 34	3434	115 21 12	3428	116 42 57	3422
	Fomalhaut	W.	76 36 12	3415	77 58 12	3405	79 20 23	3396	80 42 44	3386
	VENUS	W.	69 4 32	3502	70 24 54	3496	71 45 23	3489	73 5 59	3483
	α Pegasi	W.	54 12 0	3319	55 35 49	3304	56 59 56	3290	58 24 19	3276
	Pollux	E.	65 33 28	3066	64 4 37	3061	62 35 40	3056	61 6 37	3051
	Regulus	E.	102 27 1	3052	100 57 52	3046	99 28 36	3040	97 59 13	3034

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
		° ' "		° ' "		° ' "		° ' "	
13	SUN W.	118 4 50	3414	119 26 51	3407	120 49 0	3399	122 11 18	3390
	Fomalhaut W.	82 5 16	3378	83 27 58	3369	84 50 50	3360	86 13 52	3351
	VENUS W.	74 26 42	3475	75 47 34	3468	77 8 34	3459	78 29 44	3451
	α Pegasi W.	59 48 58	3262	61 13 54	3249	62 39 5	3236	64 4 32	3228
	Pollux E.	59 37 27	3044	58 8 9	3039	56 38 44	3032	55 9 11	3025
	Regulus E.	96 29 43	3028	95 0 5	3021	93 30 18	3014	92 0 22	3006
14	Fomalhaut W.	93 11 34	3308	94 35 36	3300	95 59 47	3293	97 24 7	3284
	VENUS W.	85 18 5	3402	86 40 19	3392	88 2 45	3380	89 25 24	3369
	α Pegasi W.	71 15 42	3158	72 42 42	3144	74 9 58	3131	75 37 30	3119
	α Arietis W.	27 53 30	3027	29 23 9	3012	30 53 7	2997	32 23 23	2982
	Pollux E.	47 39 10	2987	46 8 41	2978	44 38 1	2969	43 7 10	2962
	Regulus E.	84 28 11	2962	82 57 11	2953	81 25 59	2943	79 54 35	2935
	JUPITER E.	95 31 41	2946	94 0 20	2935	92 28 46	2926	90 57 0	2915
15	VENUS W.	96 22 0	3308	97 46 2	3296	99 10 18	3282	100 34 50	3270
	α Pegasi W.	82 59 0	3056	84 28 4	3043	85 57 24	3030	87 26 59	3018
	α Arietis W.	39 59 16	2912	41 31 19	2898	43 3 40	2885	44 36 18	2871
	Pollux E.	35 30 17	2920	33 58 23	2911	32 26 18	2903	30 54 3	2897
	Regulus E.	72 14 14	2879	70 41 28	2867	69 8 27	2855	67 35 11	2843
	JUPITER E.	83 14 46	2861	81 41 37	2849	80 8 13	2838	78 34 34	2825
16	α Pegasi W.	94 58 42	2958	96 29 47	2947	98 1 6	2936	99 32 39	2926
	α Arietis W.	52 23 50	2804	53 58 13	2791	55 32 53	2777	57 7 51	2764
	Aldebaran W.	22 20 25	3289	23 44 49	3216	25 10 39	3153	26 37 44	3100
	Regulus E.	59 44 57	2783	58 10 7	2770	56 35 0	2758	54 59 37	2745
	JUPITER E.	70 42 23	2765	69 7 9	2753	67 31 39	2741	65 55 53	2728
17	α Arietis W.	65 7 0	2698	66 43 42	2686	68 20 41	2673	69 57 57	2660
	Aldebaran W.	34 7 28	2904	35 39 42	2875	37 12 33	2858	38 45 59	2828
	MARS W.	29 51 16	2693	31 28 5	2681	33 5 11	2669	34 42 33	2656
	Regulus E.	46 58 36	2684	45 21 35	2672	43 44 17	2660	42 6 43	2648
	JUPITER E.	57 52 56	2667	56 15 32	2655	54 37 51	2643	52 59 54	2632
	Spica E.	101 1 29	2686	99 24 30	2674	97 47 15	2661	96 9 43	2649
18	α Arietis W.	78 8 27	2600	79 47 22	2589	81 26 32	2577	83 5 58	2566
	Aldebaran W.	46 40 47	2716	48 17 5	2698	49 53 47	2681	51 30 52	2665
	MARS W.	42 53 28	2598	44 32 26	2587	46 11 39	2576	47 51 7	2565
	JUPITER E.	44 46 17	2575	43 6 48	2565	41 27 5	2555	39 47 8	2545
	Spica E.	87 57 57	2590	86 18 48	2578	84 39 23	2567	82 59 43	2556
19	α Arietis W.	91 26 53	2514	93 7 47	2504	94 48 54	2494	96 30 15	2486
	Aldebaran W.	59 41 31	2593	61 20 36	2580	62 59 59	2568	64 39 38	2556
	MARS W.	56 12 4	2515	57 52 56	2505	59 34 2	2496	61 15 21	2487
	Spica E.	74 37 42	2504	72 56 35	2495	71 15 15	2486	69 33 42	2477
	SATURN E.	110 55 24	2562	109 15 37	2552	107 35 36	2542	105 55 21	2532
20	Aldebaran W.	73 1 42	2505	74 42 48	2496	76 24 7	2487	78 5 38	2480
	MARS W.	69 44 53	2448	71 27 20	2440	73 9 58	2433	74 52 46	2426
	Pollux W.	30 22 10	2430	32 3 52	2427	33 45 51	2416	35 28 6	2415
	Spica E.	61 2 50	2435	59 20 5	2428	57 37 10	2420	55 54 4	2414
	SATURN E.	97 30 46	2427	95 49 14	2479	94 7 31	2471	92 25 37	2464

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
13	SUN W.	123 33 46	3381	124 56 24	3372	126 19 12	3363	127 42 11	3353
	Fomalhaut W.	87 37 5	3342	89 0 28	3334	90 24 0	3325	91 47 42	3317
	VENUS W.	79 51 3	3442	81 12 32	3432	82 34 12	3423	83 56 3	3413
	α Pegasi W.	65 30 15	3209	66 56 13	3196	68 22 27	3183	69 48 57	3170
	Pollux E.	53 39 29	3018	52 9 39	3010	50 39 39	3002	49 9 29	2993
	Regulus E.	90 30 17	2998	89 0 2	2989	87 29 36	2981	85 58 59	2972
14	Fomalhaut W.	98 48 37	3277	100 13 15	3270	101 38 2	3263	103 2 57	3257
	VENUS W.	90 48 16	3358	92 11 21	3345	93 34 40	3333	94 58 13	3321
	α Pegasi W.	77 5 17	3106	78 33 19	3093	80 1 37	3080	81 30 11	3068
	α Arietis W.	33 53 58	2968	35 24 51	2954	36 56 2	2940	38 27 30	2926
	Pollux E.	41 36 9	2953	40 4 57	2944	38 33 34	2936	37 2 1	2927
	Regulus E.	78 22 58	2923	76 51 8	2912	75 19 4	2901	73 46 46	2890
	JUPITER E.	89 25 0	2905	87 52 47	2894	86 20 21	2883	84 47 41	2872
15	VENUS W.	101 59 37	3237	103 24 39	3243	104 49 57	3230	106 15 31	3216
	α Pegasi W.	88 56 50	3006	90 26 55	2993	91 57 16	2981	93 27 52	2970
	α Arietis W.	46 9 14	2858	47 42 27	2845	49 15 57	2831	50 49 45	2818
	Pollux E.	29 21 40	2891	27 49 9	2884	26 16 30	2880	24 43 46	2878
	Regulus E.	66 1 39	2831	64 27 52	2820	62 53 50	2807	61 19 31	2795
	JUPITER E.	77 0 39	2814	75 26 29	2801	73 52 3	2789	72 17 21	2777
16	α Pegasi W.	101 4 25	2915	102 36 25	2905	104 8 38	2895	105 41 3	2885
	α Arietis W.	58 43 6	2751	60 18 38	2738	61 54 28	2725	63 30 35	2711
	Aldebaran W.	28 5 54	3052	29 35 3	3009	31 5 5	2971	32 35 54	2933
	Regulus E.	53 23 57	2733	51 48 1	2721	50 11 49	2709	48 35 21	2696
	JUPITER E.	64 19 50	2716	62 43 31	2704	61 6 56	2691	59 30 4	2679
17	α Arietis W.	71 35 30	2648	73 13 20	2636	74 51 26	2624	76 29 48	2612
	Aldebaran W.	40 19 58	2798	41 54 28	2776	43 29 27	2755	45 4 54	2733
	MARS W.	36 20 12	2644	37 58 7	2632	39 36 18	2621	41 14 45	2609
	Regulus E.	40 28 53	2636	38 50 47	2624	37 12 25	2613	35 33 48	2601
	JUPITER E.	51 21 42	2620	49 43 14	2608	48 4 30	2597	46 25 31	2586
	Spica E.	94 31 54	2637	92 53 49	2625	91 15 28	2612	89 36 50	2601
18	α Arietis W.	84 45 40	2555	86 25 37	2545	88 5 48	2535	89 46 13	2524
	Aldebaran W.	53 8 19	2649	54 46 7	2634	56 24 16	2620	58 2 44	2606
	MARS W.	49 30 50	2555	51 10 47	2544	52 50 59	2534	54 31 25	2523
	JUPITER E.	38 6 57	2536	36 26 34	2527	34 45 58	2518	33 5 10	2510
	Spica E.	81 19 48	2545	79 39 38	2535	77 59 14	2525	76 18 35	2515
19	α Arietis W.	98 11 48	2477	99 53 34	2468	101 35 32	2460	103 17 41	2452
	Aldebaran W.	66 19 33	2545	67 59 44	2535	69 40 9	2524	71 20 49	2515
	MARS W.	62 56 52	2479	64 38 35	2470	66 20 30	2462	68 2 36	2455
	Spica E.	67 51 56	2467	66 9 57	2459	64 27 46	2451	62 45 24	2443
	SATURN E.	104 14 52	2522	102 34 9	2513	100 53 14	2504	99 12 6	2495
20	Aldebaran W.	79 47 20	2472	81 29 13	2465	83 11 16	2458	84 53 28	2451
	MARS W.	76 35 44	2419	78 18 51	2413	80 2 7	2408	81 45 31	2402
	Pollux W.	37 10 36	2436	38 53 20	2426	40 36 17	2417	42 19 27	2410
	Spica E.	54 10 49	2407	52 27 24	2401	50 43 51	2395	49 0 9	2390
	SATURN E.	90 43 33	2457	89 1 19	2450	87 18 55	2444	85 36 23	2438

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
21	Aldebaran W.	86 35 50	2445	88 18 20	2439	90 0 59	2434	91 43 45	2439
	MARS W.	83 29 3	2396	85 12 43	2391	86 56 30	2387	88 40 24	2382
	Pollux W.	44 2 48	2402	45 46 20	2395	47 30 2	2388	49 13 54	2382
	Spica E.	47 16 20	2384	45 32 23	2379	43 48 18	2375	42 4 7	2371
	SATURN E.	83 53 42	2432	82 10 53	2427	80 27 57	2422	78 44 53	2417
	Antares E.	93 3 40	2374	91 19 28	2368	89 35 8	2364	87 50 41	2359
22	Pollux W.	57 55 19	2356	59 39 57	2351	61 24 42	2347	63 9 33	2344
	Regulus W.	20 53 16	2350	22 38 3	2344	24 22 58	2340	26 7 59	2335
	SATURN E.	70 8 5	2398	68 24 28	2396	66 40 47	2394	64 57 3	2391
	Antares E.	79 6 43	2337	77 21 37	2333	75 36 26	2330	73 51 10	2326
23	Pollux W.	71 55 0	2328	73 40 18	2326	75 25 39	2324	77 11 3	2322
	Regulus W.	34 54 31	2319	36 40 3	2316	38 25 39	2314	40 11 18	2313
	JUPITER W.	24 42 24	2326	26 27 45	2320	28 13 15	2314	29 58 54	2309
	SATURN E.	56 17 48	2387	54 33 54	2387	52 50 0	2387	51 6 7	2388
	Antares E.	65 3 46	2313	63 18 6	2312	61 32 24	2310	59 46 39	2308
	SUN E.	120 39 50	2639	119 1 48	2636	117 23 42	2635	115 45 34	2632
24	Pollux W.	85 58 40	2315	87 44 17	2315	89 29 55	2314	91 15 34	2313
	Regulus W.	49 0 10	2304	50 46 3	2304	52 31 57	2303	54 17 52	2302
	JUPITER W.	38 48 42	2292	40 34 53	2289	42 21 8	2288	44 7 25	2286
	Antares E.	50 57 20	2302	49 11 23	2301	47 25 25	2300	45 39 26	2300
	SUN E.	107 34 19	2626	105 55 59	2624	104 17 37	2624	102 39 14	2623
25	Regulus W.	63 7 39	2300	64 53 38	2301	66 39 36	2301	68 25 34	2301
	JUPITER W.	52 59 21	2281	54 45 48	2281	56 32 16	2281	58 18 44	2280
	Antares E.	36 49 21	2298	35 3 19	2299	33 17 18	2299	31 31 17	2300
	SUN E.	94 27 9	2621	92 48 43	2622	91 10 18	2622	89 31 53	2622
26	Regulus W.	77 15 16	2304	79 1 10	2305	80 47 2	2307	82 32 52	2307
	JUPITER W.	67 11 6	2281	68 57 33	2282	70 43 59	2283	72 30 23	2284
	Spica W.	23 19 35	2334	25 4 45	2331	26 49 59	2329	28 35 16	2327
	SUN E.	81 19 56	2626	79 41 36	2626	78 3 17	2628	76 25 0	2629
27	Regulus W.	91 21 34	2315	93 7 11	2317	94 52 45	2320	96 38 16	2322
	JUPITER W.	81 22 0	2291	83 8 13	2293	84 54 23	2295	86 40 30	2297
	Spica W.	37 22 0	2327	39 7 20	2328	40 52 38	2329	42 37 55	2331
	SUN E.	68 14 2	2638	66 35 58	2639	64 57 56	2642	63 19 58	2644
28	JUPITER W.	95 30 14	2311	97 15 58	2313	99 1 38	2317	100 47 13	2320
	Spica W.	51 23 37	2342	53 8 35	2346	54 53 28	2348	56 38 17	2352
	SUN E.	55 11 2	2659	53 33 27	2663	51 55 57	2666	50 18 32	2671
29	Spica W.	65 21 1	2375	67 5 15	2377	68 49 23	2382	70 33 23	2387
	SATURN W.	28 57 23	2328	30 37 57	2320	32 18 43	2313	33 59 38	2308
	SUN E.	42 12 54	2693	40 36 5	2699	38 59 24	2705	37 22 51	2710
30	Spica W.	79 11 22	2418	80 54 31	2425	82 37 30	2432	84 20 19	2440
	SATURN W.	42 25 10	2306	44 6 15	2309	45 47 16	2312	47 28 13	2316
	Antares W.	33 19 28	2413	35 2 44	2419	36 45 51	2427	38 28 47	2434
	SUN E.	29 22 7	2744	27 46 26	2751	26 10 54	2759	24 35 32	2767

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
21	Aldebaran W.	93 26 38	2424	95 9 38	2421	96 52 43	2417	98 35 54	2414
	Mars W.	90 24 25	2378	92 8 32	2373	93 52 45	2370	95 37 3	2366
	Pollux W.	50 57 55	2376	52 42 4	2370	54 26 22	2365	56 10 47	2360
	Spica E.	40 19 50	2367	38 35 28	2363	36 51 0	2360	35 6 28	2357
	SATURN E.	77 1 43	2413	75 18 27	2409	73 35 5	2405	71 51 37	2402
	Antares E.	86 6 7	2354	84 21 26	2349	82 36 38	2344	80 51 43	2341
22	Pollux W.	64 54 29	2340	66 39 30	2337	68 24 36	2334	70 9 46	2331
	Regulus W.	27 53 7	2332	29 38 20	2328	31 23 39	2324	33 9 3	2322
	SATURN E.	63 13 16	2389	61 29 26	2389	59 45 35	2387	58 1 42	2387
	Antares E.	72 5 49	2324	70 20 24	2321	68 34 55	2318	66 49 22	2316
23	Pollux W.	78 56 30	2321	80 41 59	2319	82 27 31	2317	84 13 5	2317
	Regulus W.	41 56 59	2311	43 42 43	2309	45 28 30	2307	47 14 19	2306
	JUPITER W.	31 44 41	2304	33 30 34	2301	35 16 32	2298	37 2 35	2295
	SATURN E.	49 22 15	2389	47 38 25	2392	45 54 39	2395	44 10 57	2398
	Antares E.	58 0 51	2307	56 15 1	2305	54 29 9	2304	52 43 15	2303
	SUN E.	114 7 23	2631	112 29 10	2629	110 50 55	2628	109 12 38	2626
24	Pollux W.	93 1 14	2313	94 46 55	2313	96 32 36	2313	98 18 17	2312
	Regulus W.	56 3 48	2302	57 49 45	2301	59 35 43	2301	61 21 41	2301
	JUPITER W.	45 53 45	2285	47 40 7	2284	49 26 30	2283	51 12 55	2282
	Antares E.	43 53 26	2299	42 7 25	2299	40 21 24	2298	38 35 23	2298
	SUN E.	101 0 50	2622	99 22 25	2622	97 44 0	2622	96 5 35	2621
25	Regulus W.	70 11 32	2302	71 57 29	2302	73 43 26	2303	75 29 21	2303
	JUPITER W.	60 5 13	2280	61 51 42	2281	63 38 10	2281	65 24 38	2281
	Antares E.	29 45 17	2300	27 59 17	2300	26 13 18	2301	24 27 20	2302
	SUN E.	87 53 28	2623	86 15 4	2623	84 36 40	2624	82 58 17	2625
26	Regulus W.	84 18 41	2309	86 4 28	2311	87 50 12	2312	89 35 54	2313
	JUPITER W.	74 16 46	2285	76 3 7	2286	77 49 27	2287	79 35 45	2289
	Spica W.	30 20 36	2326	32 5 57	2326	33 51 18	2326	35 36 39	2326
	SUN E.	74 46 44	2630	73 8 30	2632	71 30 18	2634	69 52 9	2635
27	Regulus W.	98 23 44	2324	100 9 8	2326	101 54 29	2330	103 39 45	2333
	JUPITER W.	88 26 34	2299	90 12 35	2302	91 58 32	2304	93 44 25	2307
	Spica W.	44 23 9	2333	46 8 21	2335	47 53 30	2337	49 38 35	2339
	SUN E.	61 42 3	2647	60 4 12	2650	58 26 25	2652	56 48 41	2656
28	JUPITER W.	102 32 43	2324	104 18 7	2328	106 3 25	2333	107 48 36	2337
	Spica W.	58 23 1	2355	60 7 40	2359	61 52 13	2364	63 36 40	2368
	SUN E.	48 41 13	2675	47 3 59	2679	45 26 51	2684	43 49 49	2689
29	Spica W.	72 17 16	2394	74 1 0	2399	75 44 36	2405	77 28 4	2412
	SATURN W.	35 40 40	2505	37 21 46	2504	39 2 54	2503	40 44 3	2504
	SUN E.	35 46 25	2716	34 10 7	2723	32 33 58	2730	30 57 58	2737
30	Spica W.	86 2 57	2447	87 45 25	2453	89 27 41	2463	91 9 46	2472
	SATURN W.	49 9 4	2520	50 49 49	2525	52 30 27	2531	54 10 57	2537
	Antares W.	40 11 33	2442	41 54 8	2450	43 36 31	2458	45 18 43	2467
	SUN E.	23 0 21	2775	21 25 21	2784	19 50 32	2793	18 15 55	2801

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sideral Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
Mon.	1	^h 21 ^m 1 ^s 43.02	10.173	S. 16 56 4.8	+43.16	16 15.94	68.20	13 52.47	0.315
Tues.	2	21 5 46.76	10.139	16 38 40.0	43.89	16 15.78	68.08	13 59.63	0.281
Wed.	3	21 9 49.67	10.104	16 20 57.8	44.61	16 15.63	67.97	14 5.96	0.247
Thur.	4	21 13 51.76	10.070	16 2 58.6	+45.31	16 15.47	67.86	14 11.48	0.213
Frid.	5	21 17 53.02	10.035	15 44 43.0	45.99	16 15.31	67.74	14 16.17	0.178
Sat.	6	21 21 53.45	10.001	15 26 11.3	46.65	16 15.14	67.63	14 20.04	0.144
SUN.	7	21 25 53.07	9.967	15 7 24.0	+47.29	16 14.98	67.52	14 23.09	0.110
Mon.	8	21 29 51.87	9.933	14 48 21.4	47.91	16 14.81	67.41	14 25.33	0.077
Tues.	9	21 33 49.86	9.899	14 29 4.2	48.52	16 14.63	67.29	14 26.76	0.043
Wed.	10	21 37 47.04	9.866	14 9 32.6	+49.11	16 14.45	67.18	14 27.38	0.010
Thur.	11	21 41 43.43	9.833	13 49 47.0	49.68	16 14.27	67.07	14 27.22	0.023
Frid.	12	21 45 39.04	9.801	13 29 48.0	50.23	16 14.08	66.97	14 26.27	0.055
Sat.	13	21 49 33.88	9.769	13 9 35.8	+50.77	16 13.89	66.86	14 24.56	0.087
SUN.	14	21 53 27.96	9.738	12 49 11.0	51.29	16 13.70	66.76	14 22.09	0.118
Mon.	15	21 57 21.29	9.707	12 28 33.8	51.79	16 13.50	66.65	14 18.88	0.149
Tues.	16	22 1 13.90	9.677	12 7 44.8	+52.28	16 13.29	66.55	14 14.95	0.179
Wed.	17	22 5 5.80	9.648	11 46 44.1	52.76	16 13.08	66.45	14 10.31	0.208
Thur.	18	22 8 57.01	9.620	11 25 32.3	53.22	16 12.87	66.35	14 4.97	0.236
Frid.	19	22 12 47.54	9.592	11 4 9.8	+53.66	16 12.65	66.25	13 58.97	0.264
Sat.	20	22 16 37.42	9.565	10 42 36.8	54.08	16 12.43	66.16	13 52.31	0.291
SUN.	21	22 20 26.65	9.538	10 20 53.9	54.49	16 12.20	66.07	13 45.01	0.317
Mon.	22	22 24 15.26	9.512	9 59 1.4	+54.88	16 11.97	65.98	13 37.08	0.342
Tues.	23	22 28 3.27	9.488	9 36 59.6	55.26	16 11.74	65.89	13 28.56	0.367
Wed.	24	22 31 50.69	9.464	9 14 49.1	55.62	16 11.50	65.80	13 19.45	0.391
Thur.	25	22 35 37.54	9.440	8 52 30.1	+55.96	16 11.26	65.72	13 9.77	0.415
Frid.	26	22 39 23.83	9.418	8 30 3.1	56.28	16 11.02	65.63	12 59.54	0.438
Sat.	27	22 43 9.59	9.396	8 7 28.5	56.59	16 10.78	65.55	12 48.77	0.460
SUN.	28	22 46 54.82	9.374	7 44 46.7	56.88	16 10.53	65.47	12 37.48	0.481
Mon.	29	22 50 39.55	9.353	S. 7 21 58.2	+57.15	16 10.28	65.40	12 25.69	0.502

NOTE.—The mean time of semidiameter passing may be found by subtracting 0°.18 from the sidereal time.

The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
Mon.	1	h m s 21 1 40.67	10.172	S. 16 56 14.9	+43.15	m s 13 52.39	s 0.316	h m s 20 47 48.28
Tues.	2	21 5 44.40	10.138	16 38 50.3	43.88	13 59.56	0.281	20 51 44.83
Wed.	3	21 9 47.30	10.104	16 21 8.3	44.60	14 5.91	0.247	20 55 41.39
Thur.	4	21 13 49.38	10.070	16 3 9.4	+45.30	14 11.43	0.213	20 59 37.95
Frid.	5	21 17 50.63	10.035	15 44 54.0	45.98	14 16.13	0.179	21 3 34.50
Sat.	6	21 21 51.06	10.001	15 26 22.5	46.64	14 20.00	0.145	21 7 31.06
SUN.	7	21 25 50.68	9.967	15 7 35.4	+47.28	14 23.06	0.111	21 11 27.62
Mon.	8	21 29 49.48	9.933	14 48 33.0	47.90	14 25.31	0.077	21 15 24.17
Tues.	9	21 33 47.47	9.900	14 29 15.9	48.51	14 26.75	0.043	21 19 20.73
Wed.	10	21 37 44.66	9.867	14 9 44.4	+49.10	14 27.38	0.010	21 23 17.28
Thur.	11	21 41 41.06	9.834	13 49 59.1	49.67	14 27.23	0.023	21 27 13.84
Frid.	12	21 45 36.68	9.802	13 30 0.1	50.23	14 26.29	0.055	21 31 10.39
Sat.	13	21 49 31.53	9.770	13 9 48.1	+50.77	14 24.58	0.087	21 35 6.95
SUN.	14	21 53 25.62	9.739	12 49 23.4	51.29	14 22.12	0.118	21 39 3.50
Mon.	15	21 57 18.98	9.708	12 28 46.3	51.79	14 18.92	0.149	21 43 0.06
Tues.	16	22 1 11.61	9.678	12 7 57.2	+52.28	14 14.99	0.179	21 46 56.61
Wed.	17	22 5 3.53	9.649	11 46 56.6	52.75	14 10.36	0.208	21 50 53.17
Thur.	18	22 8 54.75	9.621	11 25 44.9	53.21	14 5.03	0.236	21 54 49.72
Frid.	19	22 12 45.31	9.593	11 4 22.4	+53.66	13 59.03	0.264	21 58 46.28
Sat.	20	22 16 35.21	9.566	10 42 49.4	54.09	13 52.38	0.291	22 2 42.83
SUN.	21	22 20 24.47	9.540	10 21 6.5	54.49	13 45.08	0.317	22 6 39.39
Mon.	22	22 24 13.10	9.514	9 59 13.9	+54.88	13 37.16	0.342	22 10 35.94
Tues.	23	22 28 1.14	9.489	9 37 12.1	55.26	13 28.65	0.367	22 14 32.49
Wed.	24	22 31 48.59	9.465	9 15 1.5	55.62	13 19.54	0.391	22 18 29.05
Thur.	25	22 35 35.47	9.442	8 52 42.5	+55.96	13 9.87	0.415	22 22 25.60
Frid.	26	22 39 21.80	9.419	8 30 15.4	56.29	12 59.64	0.437	22 26 22.16
Sat.	27	22 43 7.58	9.397	8 7 40.7	56.60	12 48.87	0.459	22 30 18.71
SUN.	28	22 46 52.85	9.376	7 44 58.8	56.89	12 37.58	0.481	22 34 15.27
Mon.	29	22 50 37.61	9.355	S. 7 22 10.1	+57.16	12 25.79	0.502	22 38 11.82

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing.

Diff. for 1 Hour,
+ 9^s.8565.
(Table III.)

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ'					
1	32	312 57 23.3	57 5.7	152.21	— 0.30	9.9937533	+28.1	h m s 3 11 40.23
2	33	313 58 15.8	57 58.1	152.16	0.17	9.9938214	28.6	3 7 44.32
3	34	314 59 7.1	58 49.2	152.11	— 0.03	9.9938907	29.1	3 3 48.41
4	35	315 59 57.1	59 39.1	152.06	+ 0.09	9.9939613	+29.7	2 59 52.50
5	36	317 0 45.8	0 27.6	152.00	0.19	9.9940332	30.2	2 55 56.59
6	37	318 1 33.0	1 14.7	151.94	0.28	9.9941063	30.8	2 52 0.68
7	38	319 2 18.8	2 0.3	151.87	+ 0.34	9.9941809	+31.4	2 48 4.77
8	39	320 3 2.9	2 44.3	151.81	0.37	9.9942571	32.0	2 44 8.86
9	40	321 3 45.4	3 26.7	151.74	0.37	9.9943348	32.7	2 40 12.96
10	41	322 4 26.3	4 7.4	151.67	+ 0.35	9.9944142	+33.4	2 36 17.05
11	42	323 5 5.4	4 46.4	151.59	0.29	9.9944954	34.2	2 32 21.14
12	43	324 5 42.8	5 23.6	151.52	0.21	9.9945785	35.0	2 28 25.23
13	44	325 6 18.6	5 59.3	151.45	+ 0.10	9.9946636	+35.9	2 24 29.32
14	45	326 6 52.7	6 33.3	151.38	— 0.01	9.9947507	36.8	2 20 33.41
15	46	327 7 25.2	7 5.6	151.32	0.14	9.9948399	37.6	2 16 37.50
16	47	328 7 56.0	7 36.3	151.25	— 0.28	9.9949311	+38.5	2 12 41.59
17	48	329 8 25.2	8 5.4	151.19	0.40	9.9950245	39.4	2 8 45.68
18	49	330 8 53.0	8 33.0	151.12	0.52	9.9951200	40.2	2 4 49.77
19	50	331 9 19.2	8 59.1	151.06	— 0.62	9.9952175	+41.0	2 0 53.86
20	51	332 9 44.0	9 23.8	151.00	0.70	9.9953169	41.8	1 56 57.95
21	52	333 10 7.3	9 47.0	150.94	0.76	9.9954182	42.6	1 53 2.05
22	53	334 10 29.1	10 8.7	150.88	— 0.79	9.9955213	+43.2	1 49 6.14
23	54	335 10 49.6	10 29.0	150.82	0.78	9.9956258	43.8	1 45 10.23
24	55	336 11 8.7	10 48.0	150.76	0.74	9.9957317	44.4	1 41 14.32
25	56	337 11 26.3	11 5.5	150.70	— 0.67	9.9958389	+44.9	1 37 18.41
26	57	338 11 42.5	11 21.6	150.64	0.58	9.9959471	45.3	1 33 22.50
27	58	339 11 57.2	11 36.2	150.58	0.47	9.9960562	45.6	1 29 26.59
28	59	340 12 10.3	11 49.1	150.51	0.35	9.9961661	45.9	1 25 30.69
29	60	341 12 21.8	12 0.5	150.44	— 0.22	9.9962767	+46.2	1 21 34.78
NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ' to the mean equinox of January 0 th .								
								Diff. for 1 Hour, — 9 ^h .8296. (Table II.)

GREENWICH MEAN TIME.

Day of the Month.	THE MOON'S								
	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	' "	' "	' "	"	' "	"	h m	m	d
1	15 38.6	15 33.9	57 17.9	-1.40	57 0.7	-1.46	6		29.2
2	15 29.0	15 24.1	56 43.0	1.49	56 25.0	1.50	0 46.0	1.94	0.7
3	15 19.2	15 14.4	56 7.0	1.49	55 49.3	1.45	1 31.0	1.81	1.7
4	15 9.8	15 5.4	55 32.2	-1.38	55 16.1	-1.29	2 13.4	1.73	2.7
5	15 1.4	14 57.7	55 1.3	1.18	54 48.0	1.03	2 54.5	1.70	3.7
6	14 54.6	14 52.0	54 36.5	0.88	54 26.9	0.70	3 35.4	1.71	4.7
7	14 50.0	14 48.7	54 19.6	-0.51	54 14.7	-0.31	4 17.0	1.76	5.7
8	14 48.0	14 48.0	54 12.2	-0.10	54 12.3	+0.12	5 0.3	1.85	6.7
9	14 48.8	14 50.2	54 15.0	+0.34	54 20.4	0.56	5 46.1	1.97	7.7
10	14 52.4	14 55.3	54 28.5	+0.78	54 39.1	+0.99	6 34.7	2.09	8.7
11	14 58.9	15 3.1	54 52.2	1.19	55 7.6	1.38	7 26.2	2.19	9.7
12	15 7.9	15 13.1	55 25.2	1.54	55 44.6	1.68	8 19.7	2.26	10.7
13	15 18.8	15 24.9	56 5.5	+1.80	56 27.7	+1.88	9 14.1	2.27	11.7
14	15 31.1	15 37.5	56 50.6	1.93	57 13.9	1.94	10 8.1	2.23	12.7
15	15 43.8	15 50.0	57 37.2	1.92	57 59.9	1.85	11 0.7	2.16	13.7
16	15 55.9	16 1.4	58 21.5	+1.74	58 41.7	+1.60	11 51.7	2.09	14.7
17	16 6.3	16 10.6	58 59.9	1.42	59 15.7	1.22	12 41.2	2.04	15.7
18	16 14.2	16 17.1	59 29.0	0.99	59 39.4	0.75	13 30.1	2.04	16.7
19	16 19.1	16 20.4	59 47.0	+0.50	59 51.5	+0.26	14 19.5	2.08	17.7
20	16 20.8	16 20.6	59 53.2	+0.03	59 52.2	-0.19	15 10.5	2.17	18.7
21	16 19.6	16 18.0	59 48.6	-0.39	59 42.8	0.56	16 4.1	2.30	19.7
22	16 15.9	16 13.4	59 35.1	-0.71	59 25.8	-0.83	17 0.9	2.43	20.7
23	16 10.5	16 7.2	59 15.1	0.94	59 3.3	1.02	18 0.3	2.52	21.7
24	16 3.8	16 0.2	58 50.7	1.08	58 37.5	1.12	19 1.0	2.53	22.7
25	15 56.5	15 52.7	58 23.9	-1.15	58 9.9	-1.18	20 0.9	2.45	23.7
26	15 48.8	15 44.9	57 55.7	1.19	57 41.3	1.20	20 58.0	2.30	24.7
27	15 41.0	15 37.0	57 26.8	1.21	57 12.2	1.22	21 51.1	2.13	25.7
28	15 33.0	15 29.0	56 57.6	1.22	56 42.9	1.23	22 40.1	1.96	26.7
29	15 25.0	15 21.0	56 28.2	-1.22	56 13.6	-1.22	23 25.6	1.84	27.7

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 1.					WEDNESDAY 3.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	20 45 25.91	2.1996	S. 18 39 36.4	11.686	0	22 24 0.43	1.9300	S. 8 6 19.8	14.178
1	20 47 37.68	2.1928	18 27 52.7	11.771	1	22 25 56.11	1.9260	7 52 8.8	14.192
2	20 49 49.04	2.1860	18 16 3.9	11.855	2	22 27 51.55	1.9220	7 37 56.7	14.211
3	20 52 0.00	2.1793	18 4 10.1	11.938	3	22 29 46.75	1.9181	7 23 43.5	14.229
4	20 54 10.56	2.1726	17 52 11.4	12.019	4	22 31 41.72	1.9143	7 9 29.2	14.247
5	20 56 20.72	2.1659	17 40 7.8	12.099	5	22 33 36.47	1.9106	6 55 13.9	14.262
6	20 58 30.47	2.1592	17 27 59.5	12.177	6	22 35 30.99	1.9068	6 40 57.8	14.276
7	21 0 39.83	2.1527	17 15 46.6	12.253	7	22 37 25.29	1.9032	6 26 40.8	14.290
8	21 2 48.80	2.1462	17 3 29.1	12.328	8	22 39 19.38	1.8997	6 12 23.0	14.302
9	21 4 57.37	2.1397	16 51 7.2	12.402	9	22 41 13.26	1.8962	5 58 4.5	14.313
10	21 7 5.56	2.1332	16 38 40.9	12.474	10	22 43 6.93	1.8928	5 43 45.4	14.323
11	21 9 13.36	2.1267	16 26 10.3	12.544	11	22 45 0.40	1.8895	5 29 25.7	14.333
12	21 11 20.77	2.1203	16 13 35.6	12.612	12	22 46 53.67	1.8862	5 15 5.4	14.342
13	21 13 27.80	2.1141	16 0 56.8	12.680	13	22 48 46.75	1.8831	5 0 44.7	14.349
14	21 15 34.46	2.1078	15 48 14.0	12.746	14	22 50 39.64	1.8800	4 46 23.6	14.355
15	21 17 40.74	2.1016	15 35 27.3	12.810	15	22 52 32.35	1.8770	4 32 2.1	14.361
16	21 19 46.65	2.0954	15 22 36.8	12.873	16	22 54 24.88	1.8741	4 17 40.3	14.365
17	21 21 52.19	2.0893	15 9 42.5	12.936	17	22 56 17.24	1.8712	4 3 18.3	14.367
18	21 23 57.37	2.0832	14 56 44.5	12.996	18	22 58 9.42	1.8683	3 48 56.2	14.370
19	21 26 2.18	2.0772	14 43 43.0	13.054	19	23 0 1.44	1.8656	3 34 33.9	14.372
20	21 28 6.63	2.0712	14 30 38.0	13.111	20	23 1 53.30	1.8629	3 20 11.6	14.372
21	21 30 10.73	2.0653	14 17 29.7	13.166	21	23 3 44.99	1.8602	3 5 49.3	14.371
22	21 32 14.47	2.0595	14 4 18.1	13.221	22	23 5 36.53	1.8578	2 51 27.1	14.370
23	21 34 17.87	2.0537	S. 13 51 3.2	13.274	23	23 7 27.93	1.8554	S. 2 37 4.9	14.368
TUESDAY 2.					THURSDAY 4.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	21 36 20.92	2.0480	S. 13 37 45.2	13.326	0	23 9 19.18	1.8530	S. 2 22 42.9	14.364
1	21 38 23.63	2.0423	13 24 24.1	13.376	1	23 11 10.29	1.8507	2 8 21.2	14.360
2	21 40 26.00	2.0367	13 11 0.1	13.424	2	23 13 1.27	1.8485	1 53 59.7	14.355
3	21 42 28.03	2.0312	12 57 33.2	13.472	3	23 14 52.11	1.8463	1 39 38.6	14.349
4	21 44 29.74	2.0257	12 44 3.5	13.518	4	23 16 42.83	1.8443	1 25 17.8	14.342
5	21 46 31.12	2.0202	12 30 31.1	13.562	5	23 18 33.43	1.8423	1 10 57.5	14.334
6	21 48 32.17	2.0148	12 16 56.0	13.606	6	23 20 23.91	1.8404	0 56 37.7	14.326
7	21 50 32.90	2.0096	12 3 18.4	13.648	7	23 22 14.28	1.8386	0 42 18.4	14.317
8	21 52 33.32	2.0044	11 49 38.3	13.689	8	23 24 4.54	1.8368	0 27 59.7	14.306
9	21 54 33.43	1.9993	11 35 55.7	13.729	9	23 25 54.69	1.8350	S. 0 13 41.7	14.294
10	21 56 33.23	1.9942	11 22 10.8	13.767	10	23 27 44.74	1.8334	N. 0 0 35.6	14.282
11	21 58 32.73	1.9892	11 8 23.7	13.803	11	23 29 34.70	1.8318	0 14 52.2	14.270
12	22 0 31.93	1.9842	10 54 34.4	13.839	12	23 31 24.56	1.8304	0 29 8.0	14.256
13	22 2 30.83	1.9793	10 40 43.0	13.873	13	23 33 14.34	1.8290	0 43 22.9	14.241
14	22 4 29.44	1.9744	10 26 49.6	13.907	14	23 35 4.04	1.8276	0 57 36.9	14.226
15	22 6 27.76	1.9697	10 12 54.2	13.939	15	23 36 53.65	1.8263	1 11 50.0	14.210
16	22 8 25.80	1.9650	9 58 56.9	13.970	16	23 38 43.19	1.8251	1 26 2.1	14.193
17	22 10 23.56	1.9604	9 44 57.8	13.999	17	23 40 32.66	1.8239	1 40 13.2	14.175
18	22 12 21.05	1.9558	9 30 57.0	14.027	18	23 42 22.06	1.8228	1 54 23.1	14.157
19	22 14 18.26	1.9513	9 16 54.6	14.054	19	23 44 11.40	1.8219	2 8 31.9	14.137
20	22 16 15.21	1.9470	9 2 50.5	14.081	20	23 46 0.69	1.8210	2 22 39.5	14.117
21	22 18 11.90	1.9427	8 48 44.9	14.105	21	23 47 49.92	1.8201	2 36 45.9	14.096
22	22 20 8.33	1.9384	8 34 37.9	14.128	22	23 49 39.10	1.8193	2 50 51.0	14.073
23	22 22 4.51	1.9342	8 20 29.5	14.151	23	23 51 28.24	1.8187	3 4 54.7	14.050
24	22 24 0.43	1.9300	S. 8 6 19.8	14.172	24	23 53 17.35	1.8182	N. 3 18 57.0	14.027

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 5.					SUNDAY 7.				
0	h m s		N. 3 18 57.0	24.027	0	h m s		N. 13 51 29.9	12.059
1	23 53 17.35	1.8182	3 32 57.9	14.003	1	1 21 6.89	1.8663	14 3 31.7	12.001
2	23 55 6.42	1.8175	3 46 57.3	13.978	2	1 22 58.94	1.8688	14 15 30.0	11.942
3	23 56 55.45	1.8169	4 0 55.3	13.953	3	1 24 51.15	1.8715	14 27 24.8	11.883
4	23 58 44.45	1.8165	4 14 51.7	13.927	4	1 26 43.52	1.8742	14 39 16.0	11.823
5	0 0 33.43	1.8162	4 28 46.5	13.899	5	1 28 36.05	1.8769	14 51 3.5	11.762
6	0 2 22.39	1.8159	4 42 39.6	13.871	6	1 30 28.74	1.8796	15 2 47.4	11.701
7	0 4 11.34	1.8157	4 56 31.0	13.842	7	1 32 21.60	1.8824	15 14 27.6	11.638
8	0 6 0.27	1.8155	5 10 20.7	13.813	8	1 34 14.63	1.8852	15 26 4.0	11.575
9	0 7 49.20	1.8155	5 24 8.6	13.783	9	1 36 7.83	1.8882	15 37 36.6	11.512
10	0 9 38.13	1.8155	5 37 54.6	13.752	10	1 38 1.21	1.8912	15 49 5.4	11.447
11	0 11 27.06	1.8156	5 51 38.8	13.721	11	1 39 54.77	1.8942	16 0 30.3	11.382
12	0 13 16.00	1.8157	6 5 21.1	13.688	12	1 41 48.52	1.8973	16 11 51.2	11.316
13	0 15 4.94	1.8158	6 19 1.4	13.655	13	1 43 42.45	1.9004	16 23 8.2	11.250
14	0 16 53.90	1.8161	6 32 39.7	13.622	14	1 45 36.57	1.9036	16 34 21.2	11.182
15	0 18 42.88	1.8164	6 46 16.0	13.587	15	1 47 30.88	1.9068	16 45 30.1	11.114
16	0 20 31.87	1.8167	6 59 50.2	13.552	16	1 49 25.39	1.9102	16 56 34.9	11.046
17	0 22 20.89	1.8173	7 13 22.2	13.515	17	1 51 20.10	1.9135	17 7 35.6	10.977
18	0 24 9.95	1.8179	7 26 52.0	13.478	18	1 53 15.01	1.9168	17 18 32.1	10.906
19	0 25 59.04	1.8185	7 40 19.6	13.441	19	1 55 10.12	1.9202	17 29 24.3	10.835
20	0 27 48.17	1.8192	7 53 45.0	13.404	20	1 57 5.44	1.9237	17 40 12.3	10.764
21	0 29 37.34	1.8198	8 7 8.1	13.365	21	1 59 0.97	1.9272	17 50 56.0	10.692
22	0 31 26.55	1.8206	8 20 28.8	13.325	22	2 0 56.71	1.9308	18 1 35.3	10.619
23	0 33 15.81	1.8215	8 33 47.1	13.286	23	2 2 52.67	1.9345	18 12 10.2	10.545
24	0 35 5.13	1.8225			24	2 4 48.85	1.9381		
SATURDAY 6.					MONDAY 8.				
0	0 36 54.51	1.8235	N. 8 47 3.1	13.246	0	2 6 45.24	1.9418	N. 18 22 40.7	10.471
1	0 38 43.95	1.8245	9 0 16.6	13.204	1	2 8 41.86	1.9456	18 33 6.7	10.395
2	0 40 33.45	1.8256	9 13 27.5	13.161	2	2 10 38.71	1.9494	18 43 28.1	10.318
3	0 42 23.02	1.8268	9 26 35.9	13.118	3	2 12 35.79	1.9532	18 53 44.9	10.241
4	0 44 12.67	1.8281	9 39 41.7	13.075	4	2 14 33.10	1.9571	19 3 57.1	10.164
5	0 46 2.40	1.8294	9 52 44.9	13.031	5	2 16 30.64	1.9609	19 14 4.6	10.086
6	0 47 52.20	1.8307	10 5 45.4	12.986	6	2 18 28.41	1.9648	19 24 7.4	10.007
7	0 49 42.09	1.8322	10 18 43.2	12.940	7	2 20 26.42	1.9689	19 34 5.4	9.927
8	0 51 32.07	1.8338	10 31 38.2	12.894	8	2 22 24.68	1.9730	19 43 58.6	9.846
9	0 53 22.15	1.8354	10 44 30.5	12.847	9	2 24 23.18	1.9770	19 53 46.9	9.764
10	0 55 12.32	1.8370	10 57 19.9	12.799	10	2 26 21.92	1.9811	20 3 30.3	9.682
11	0 57 2.59	1.8387	11 10 6.4	12.750	11	2 28 20.91	1.9852	20 13 8.8	9.600
12	0 58 52.96	1.8404	11 22 49.9	12.701	12	2 30 20.15	1.9894	20 22 42.3	9.517
13	1 0 43.44	1.8422	11 35 30.5	12.652	13	2 32 19.64	1.9936	20 32 10.8	9.432
14	1 2 34.03	1.8442	11 48 8.1	12.602	14	2 34 19.38	1.9978	20 41 34.1	9.346
15	1 4 24.74	1.8462	12 0 42.7	12.551	15	2 36 19.38	2.0021	20 50 52.3	9.260
16	1 6 15.57	1.8482	12 13 14.2	12.498	16	2 38 19.63	2.0064	21 0 5.3	9.173
17	1 8 6.52	1.8502	12 25 42.5	12.446	17	2 40 20.14	2.0107	21 9 13.0	9.085
18	1 9 57.59	1.8523	12 38 7.7	12.393	18	2 42 20.91	2.0150	21 18 15.5	8.997
19	1 11 48.79	1.8545	12 50 29.7	12.339	19	2 44 21.94	2.0194	21 27 12.6	8.907
20	1 13 40.13	1.8568	13 2 48.4	12.284	20	2 46 23.24	2.0238	21 36 4.3	8.817
21	1 15 31.61	1.8592	13 15 3.8	12.229	21	2 48 24.80	2.0282	21 44 50.7	8.727
22	1 17 23.23	1.8615	13 27 15.9	12.173	22	2 50 26.63	2.0327	21 53 31.6	8.636
23	1 19 14.99	1.8639	13 39 24.6	12.117	23	2 52 28.72	2.0371	22 2 7.0	8.542
24	1 21 6.89	1.8663	N. 13 51 29.9	12.059	24	2 54 31.08	2.0416	N. 22 10 36.7	8.448

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 9.					THURSDAY 11.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	2 54 31.08	8.0416	N.22 10 36.7	8.448	0	4 37 44.99	8.2540	N.26 53 12.7	3.017
1	2 56 33.71	2.0461	22 19 0.8	8.333	1	4 40 0.34	8.2577	26 56 9.8	2.885
2	2 58 36.61	2.0507	22 27 19.3	8.261	2	4 42 15.91	2.2613	26 58 58.9	2.753
3	3 0 39.79	2.0552	22 35 32.1	8.185	3	4 44 31.70	2.2650	27 1 40.1	2.620
4	3 2 43.24	2.0597	22 43 39.1	8.068	4	4 46 47.71	2.2686	27 4 13.3	2.486
5	3 4 46.96	2.0642	22 51 40.2	7.970	5	4 49 3.93	2.2720	27 6 38.4	2.350
6	3 6 50.95	2.0688	22 59 35.5	7.873	6	4 51 20.35	2.2754	27 8 55.3	2.214
7	3 8 55.22	2.0735	23 7 24.9	7.773	7	4 53 36.98	2.2788	27 11 4.1	2.079
8	3 10 59.77	2.0781	23 15 8.3	7.673	8	4 55 53.81	2.2822	27 13 4.8	1.943
9	3 13 4.59	2.0827	23 22 45.7	7.573	9	4 58 10.84	2.2854	27 14 57.3	1.806
10	3 15 9.69	2.0873	23 30 17.0	7.472	10	5 0 28.06	2.2886	27 16 41.5	1.668
11	3 17 15.07	2.0920	23 37 42.3	7.370	11	5 2 45.47	2.2917	27 18 17.4	1.529
12	3 19 20.73	2.0967	23 45 1.4	7.267	12	5 5 3.07	2.2948	27 19 45.0	1.390
13	3 21 26.67	2.1013	23 52 14.3	7.162	13	5 7 20.85	2.2978	27 21 4.2	1.250
14	3 23 32.88	2.1058	23 59 20.9	7.057	14	5 9 38.80	2.3007	27 22 15.0	1.110
15	3 25 39.37	2.1105	24 6 21.2	6.952	15	5 11 56.93	2.3036	27 23 17.4	0.970
16	3 27 46.14	2.1151	24 13 15.1	6.845	16	5 14 15.23	2.3065	27 24 11.4	0.829
17	3 29 53.18	2.1198	24 20 2.6	6.738	17	5 16 33.69	2.3090	27 24 56.9	0.687
18	3 32 0.51	2.1245	24 26 43.7	6.631	18	5 18 52.31	2.3117	27 25 33.8	0.544
19	3 34 8.12	2.1291	24 33 18.3	6.522	19	5 21 11.09	2.3142	27 26 2.2	0.401
20	3 36 16.00	2.1337	24 39 46.3	6.412	20	5 23 30.01	2.3166	27 26 22.0	0.258
21	3 38 24.16	2.1383	24 46 7.7	6.302	21	5 25 49.08	2.3190	27 26 33.2	+ 0.115
22	3 40 32.60	2.1429	24 52 22.5	6.190	22	5 28 8.29	2.3213	27 26 35.8	- 0.029
23	3 42 41.31	2.1475	N.24 58 30.5	6.078	23	5 30 27.64	2.3236	N.27 26 29.7	0.174
WEDNESDAY 10.					FRIDAY 12.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	3 44 50.30	2.1521	N.25 4 31.8	5.965	0	5 32 47.12	2.3257	N.27 26 14.9	0.319
1	3 46 59.56	2.1567	25 10 26.3	5.851	1	5 35 6.72	2.3278	27 25 51.4	0.464
2	3 49 9.10	2.1612	25 16 13.9	5.737	2	5 37 26.45	2.3298	27 25 19.2	0.609
3	3 51 18.91	2.1657	25 21 54.7	5.622	3	5 39 46.30	2.3317	27 24 38.3	0.755
4	3 53 28.99	2.1702	25 27 28.5	5.505	4	5 42 6.26	2.3335	27 23 48.6	0.902
5	3 55 39.34	2.1747	25 32 55.3	5.388	5	5 44 26.32	2.3352	27 22 50.1	1.048
6	3 57 49.96	2.1792	25 38 15.1	5.271	6	5 46 46.49	2.3369	27 21 42.8	1.195
7	4 0 0.84	2.1836	25 43 27.8	5.152	7	5 49 6.75	2.3384	27 20 26.7	1.342
8	4 2 11.99	2.1881	25 48 33.3	5.032	8	5 51 27.10	2.3399	27 19 1.7	1.490
9	4 4 23.41	2.1925	25 53 31.6	4.912	9	5 53 47.54	2.3413	27 17 27.9	1.638
10	4 6 35.09	2.1968	25 58 22.7	4.791	10	5 56 8.06	2.3427	27 15 45.2	1.786
11	4 8 47.03	2.2012	26 3 6.5	4.669	11	5 58 28.66	2.3439	27 13 53.6	1.934
12	4 10 59.23	2.2055	26 7 43.0	4.547	12	6 0 49.33	2.3451	27 11 53.1	2.082
13	4 13 11.69	2.2097	26 12 12.1	4.423	13	6 3 10.07	2.3461	27 9 43.7	2.231
14	4 15 24.40	2.2139	26 16 33.8	4.299	14	6 5 30.86	2.3470	27 7 25.4	2.380
15	4 17 37.36	2.2181	26 20 48.0	4.174	15	6 7 51.71	2.3479	27 4 58.1	2.529
16	4 19 50.57	2.2222	26 24 54.7	4.049	16	6 10 12.61	2.3487	27 2 21.9	2.678
17	4 22 4.03	2.2264	26 28 53.9	3.923	17	6 12 33.55	2.3494	26 59 36.8	2.827
18	4 24 17.74	2.2305	26 32 45.5	3.796	18	6 14 54.54	2.3501	26 56 42.7	2.976
19	4 26 31.69	2.2345	26 36 29.4	3.668	19	6 17 15.56	2.3506	26 53 39.7	3.125
20	4 28 45.88	2.2385	26 40 5.6	3.539	20	6 19 36.61	2.3511	26 50 27.7	3.275
21	4 31 0.31	2.2424	26 43 34.1	3.410	21	6 21 57.69	2.3514	26 47 6.7	3.424
22	4 33 14.97	2.2463	26 46 54.8	3.280	22	6 24 18.78	2.3517	26 43 36.8	3.573
23	4 35 29.86	2.2502	26 50 7.7	3.149	23	6 26 39.89	2.3519	26 39 57.9	3.723
24	4 37 44.99	2.2540	N.26 53 12.7	3.017	24	6 29 1.01	2.3520	N.26 36 10.0	3.872

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 13.					MONDAY 15.				
0	6 29 1.01	2.3580	N.26 36 10.0	3.872	0	8 20 38.47	2.2769	N.20 43 27.4	10.624
1	6 31 22.13	2.3580	26 32 13.2	4.022	1	8 22 55.01	2.2742	20 32 46.2	10.748
2	6 33 43.25	2.3519	26 28 7.4	4.172	2	8 25 11.38	2.2715	20 21 57.6	10.872
3	6 36 4.36	2.3518	26 23 52.6	4.321	3	8 27 27.59	2.2688	20 11 1.6	10.994
4	6 38 25.46	2.3516	26 19 28.9	4.469	4	8 29 43.64	2.2661	19 59 58.3	11.115
5	6 40 46.55	2.3513	26 14 56.3	4.618	5	8 31 59.53	2.2634	19 48 47.8	11.235
6	6 43 7.62	2.3509	26 10 14.7	4.767	6	8 34 15.25	2.2607	19 37 30.1	11.354
7	6 45 28.66	2.3504	26 5 24.2	4.916	7	8 36 30.81	2.2580	19 26 5.3	11.472
8	6 47 49.67	2.3498	26 0 24.8	5.065	8	8 38 46.21	2.2552	19 14 33.4	11.590
9	6 50 10.64	2.3492	25 55 16.4	5.213	9	8 41 1.44	2.2525	19 2 54.5	11.707
10	6 52 31.57	2.3485	25 49 59.2	5.361	10	8 43 16.51	2.2497	18 51 8.6	11.822
11	6 54 52.46	2.3477	25 44 33.1	5.508	11	8 45 31.41	2.2469	18 39 15.9	11.935
12	6 57 13.30	2.3469	25 38 58.2	5.656	12	8 47 46.14	2.2442	18 27 16.4	12.048
13	6 59 34.09	2.3460	25 33 14.4	5.803	13	8 50 0.71	2.2415	18 15 10.1	12.160
14	7 1 54.82	2.3449	25 27 21.8	5.950	14	8 52 15.12	2.2387	18 2 57.2	12.270
15	7 4 15.48	2.3438	25 21 20.4	6.097	15	8 54 29.36	2.2360	17 50 37.7	12.380
16	7 6 36.07	2.3427	25 15 10.2	6.243	16	8 56 43.44	2.2332	17 38 11.6	12.488
17	7 8 56.60	2.3416	25 8 51.3	6.388	17	8 58 57.35	2.2305	17 25 39.1	12.595
18	7 11 17.06	2.3403	25 2 23.6	6.534	18	9 1 11.10	2.2278	17 13 0.2	12.701
19	7 13 37.44	2.3389	24 55 47.2	6.679	19	9 3 24.69	2.2251	17 0 15.0	12.806
20	7 15 57.73	2.3374	24 49 2.1	6.824	20	9 5 38.12	2.2224	16 47 23.5	12.910
21	7 18 17.93	2.3359	24 42 8.3	6.969	21	9 7 51.38	2.2197	16 34 25.8	13.012
22	7 20 38.04	2.3343	24 35 5.8	7.112	22	9 10 4.48	2.2171	16 21 22.0	13.113
23	7 22 58.05	2.3327	N.24 27 54.8	7.255	23	9 12 17.43	2.2145	N.16 8 12.2	13.212
SUNDAY 14.					TUESDAY 16.				
0	7 25 17.97	2.3311	N.24 20 35.2	7.398	0	9 14 30.22	2.2118	N.15 54 56.5	13.311
1	7 27 37.78	2.3294	24 13 7.1	7.540	1	9 16 42.85	2.2092	15 41 34.9	13.409
2	7 29 57.49	2.3276	24 5 30.4	7.682	2	9 18 55.33	2.2067	15 28 7.4	13.506
3	7 32 17.09	2.3257	23 57 45.2	7.823	3	9 21 7.66	2.2042	15 14 34.2	13.600
4	7 34 36.58	2.3238	23 49 51.6	7.963	4	9 23 19.84	2.2017	15 0 55.4	13.693
5	7 36 55.95	2.3219	23 41 49.6	8.104	5	9 25 31.86	2.1991	14 47 11.0	13.786
6	7 39 15.21	2.3199	23 33 39.1	8.244	6	9 27 43.73	2.1966	14 33 21.1	13.877
7	7 41 34.34	2.3178	23 25 20.3	8.382	7	9 29 55.46	2.1942	14 19 25.8	13.967
8	7 43 53.35	2.3157	23 16 53.3	8.519	8	9 32 7.04	2.1918	14 5 25.1	14.055
9	7 46 12.23	2.3136	23 8 18.0	8.656	9	9 34 18.48	2.1895	13 51 19.2	14.142
10	7 48 30.98	2.3113	22 59 34.5	8.793	10	9 36 29.78	2.1872	13 37 8.1	14.227
11	7 50 49.59	2.3091	22 50 42.8	8.930	11	9 38 40.94	2.1848	13 22 51.9	14.312
12	7 53 8.07	2.3068	22 41 42.9	9.065	12	9 40 51.96	2.1826	13 8 30.6	14.396
13	7 55 26.41	2.3045	22 32 35.0	9.199	13	9 43 2.85	2.1803	12 54 4.4	14.477
14	7 57 44.61	2.3022	22 23 19.0	9.333	14	9 45 13.60	2.1781	12 39 33.4	14.557
15	8 0 2.67	2.2998	22 13 55.0	9.467	15	9 47 24.22	2.1760	12 24 57.6	14.636
16	8 2 20.58	2.2973	22 4 23.0	9.598	16	9 49 34.72	2.1739	12 10 17.1	14.713
17	8 4 38.35	2.2949	21 54 43.2	9.729	17	9 51 45.09	2.1718	11 55 32.0	14.788
18	8 6 55.97	2.2924	21 44 55.5	9.860	18	9 53 55.34	2.1698	11 40 42.5	14.863
19	8 9 13.44	2.2899	21 35 0.0	9.989	19	9 56 5.47	2.1678	11 25 48.5	14.937
20	8 11 30.76	2.2873	21 24 56.8	10.118	20	9 58 15.48	2.1659	11 10 50.1	15.008
21	8 13 47.92	2.2847	21 14 45.8	10.246	21	10 0 25.38	2.1641	10 55 47.5	15.078
22	8 16 4.93	2.2821	21 4 27.2	10.372	22	10 2 35.17	2.1622	10 40 40.7	15.147
23	8 18 21.78	2.2795	20 54 1.1	10.498	23	10 4 44.85	2.1604	10 25 29.8	15.214
24	8 20 38.47	2.2769	N.20 43 27.4	10.624	24	10 6 54.42	2.1587	N.10 10 15.0	15.279

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 17.					FRIDAY 19.				
0	10 6 54.42	2.1587	N. 10 10 15.0	15.279	0	11 49 40.31	2.1491	S. 2 49 52.8	16.611
1	10 9 3.89	2.1570	9 54 56.3	15.344	1	11 51 49.30	2.1507	3 6 29.1	16.598
2	10 11 13.26	2.1554	9 39 33.7	15.408	2	11 53 58.39	2.1523	3 23 4.6	16.584
3	10 13 22.54	2.1538	9 24 7.3	15.470	3	11 56 7.58	2.1541	3 39 39.2	16.569
4	10 15 31.72	2.1522	9 8 37.3	15.529	4	11 58 16.88	2.1558	3 56 12.9	16.552
5	10 17 40.81	2.1508	8 53 3.8	15.587	5	12 0 26.28	2.1576	4 12 45.5	16.532
6	10 19 49.82	2.1494	8 37 26.8	15.645	6	12 2 35.79	2.1595	4 29 16.8	16.511
7	10 21 58.74	2.1480	8 21 46.4	15.701	7	12 4 45.42	2.1615	4 45 46.8	16.489
8	10 24 7.58	2.1467	8 6 2.7	15.754	8	12 6 55.17	2.1636	5 2 15.5	16.466
9	10 26 16.35	2.1455	7 50 15.9	15.806	9	12 9 5.05	2.1657	5 18 42.7	16.440
10	10 28 25.04	2.1443	7 34 26.0	15.857	10	12 11 15.05	2.1678	5 35 8.3	16.412
11	10 30 33.66	2.1432	7 18 33.1	15.907	11	12 13 25.19	2.1701	5 51 32.2	16.383
12	10 32 42.22	2.1422	7 2 37.2	15.955	12	12 15 35.47	2.1725	6 7 54.3	16.352
13	10 34 50.72	2.1412	6 46 38.5	16.001	13	12 17 45.89	2.1749	6 24 14.5	16.320
14	10 36 59.16	2.1402	6 30 37.1	16.045	14	12 19 56.46	2.1774	6 40 32.7	16.285
15	10 39 7.54	2.1393	6 14 33.1	16.088	15	12 22 7.18	2.1799	6 56 48.7	16.249
16	10 41 15.87	2.1385	5 58 26.5	16.130	16	12 24 18.05	2.1826	7 13 2.5	16.212
17	10 43 24.16	2.1377	5 42 17.5	16.170	17	12 26 29.09	2.1853	7 29 14.1	16.173
18	10 45 32.47	2.1371	5 26 6.1	16.209	18	12 28 40.29	2.1881	7 45 23.3	16.132
19	10 47 40.61	2.1365	5 9 52.4	16.246	19	12 30 51.66	2.1909	8 1 29.9	16.088
20	10 49 48.78	2.1359	4 53 36.6	16.281	20	12 33 3.20	2.1938	8 17 33.9	16.044
21	10 51 56.92	2.1354	4 37 18.7	16.315	21	12 35 14.92	2.1968	8 33 35.2	15.998
22	10 54 5.03	2.1350	4 20 58.8	16.347	22	12 37 26.82	2.1999	8 49 33.7	15.950
23	10 56 13.12	2.1347	N. 4 4 37.1	16.377	23	12 39 38.91	2.2030	S. 9 5 29.2	15.900
THURSDAY 18.					SATURDAY 20.				
0	10 58 21.19	2.1344	N. 3 48 13.6	16.406	0	12 41 51.18	2.2062	S. 9 21 21.7	15.849
1	11 0 29.24	2.1342	3 31 48.4	16.433	1	12 44 3.65	2.2095	9 37 11.1	15.797
2	11 2 37.29	2.1341	3 15 21.6	16.459	2	12 46 16.32	2.2128	9 52 57.3	15.742
3	11 4 45.33	2.1340	2 58 53.3	16.483	3	12 48 29.18	2.2161	10 8 40.1	15.685
4	11 6 53.37	2.1340	2 42 23.6	16.506	4	12 50 42.25	2.2196	10 24 19.5	15.627
5	11 9 1.41	2.1340	2 25 52.6	16.527	5	12 52 55.53	2.2231	10 39 55.3	15.567
6	11 11 9.45	2.1342	2 9 20.4	16.546	6	12 55 9.02	2.2266	10 55 27.5	15.506
7	11 13 17.51	2.1344	1 52 47.1	16.563	7	12 57 22.72	2.2303	11 10 56.0	15.442
8	11 15 25.58	2.1347	1 36 12.8	16.579	8	12 59 36.65	2.2340	11 26 20.6	15.377
9	11 17 33.67	2.1351	1 19 37.6	16.593	9	1 1 50.80	2.2378	11 41 41.2	15.310
10	11 19 41.79	2.1355	1 3 1.6	16.607	10	1 3 4 5.18	2.2416	11 56 57.8	15.242
11	11 21 49.93	2.1359	0 46 24.8	16.618	11	1 3 6 19.79	2.2454	12 12 10.2	15.172
12	11 23 58.10	2.1365	0 29 47.4	16.627	12	1 3 8 34.63	2.2493	12 27 18.4	15.100
13	11 26 6.31	2.1372	N. 0 13 9.5	16.635	13	1 3 10 49.71	2.2533	12 42 22.2	15.027
14	11 28 14.56	2.1379	S. 0 3 28.8	16.641	14	1 3 13 5.03	2.2573	12 57 21.6	14.952
15	11 30 22.86	2.1387	0 20 7.4	16.645	15	1 3 15 20.59	2.2614	13 12 16.4	14.875
16	11 32 31.21	2.1396	0 36 46.2	16.648	16	1 3 17 36.40	2.2656	13 27 6.6	14.797
17	11 34 39.61	2.1405	0 53 25.2	16.650	17	1 3 19 52.46	2.2698	13 41 52.0	14.716
18	11 36 48.07	2.1416	1 10 4.2	16.649	18	1 3 22 8.78	2.2741	13 56 32.5	14.634
19	11 38 56.60	2.1427	1 26 43.1	16.647	19	1 3 24 25.35	2.2784	14 11 8.1	14.551
20	11 41 5.19	2.1438	1 43 21.8	16.642	20	1 3 26 42.18	2.2827	14 25 38.6	14.465
21	11 43 13.85	2.1450	2 0 0.2	16.637	21	1 3 28 59.28	2.2871	14 40 3.9	14.378
22	11 45 22.59	2.1463	2 16 38.2	16.630	22	1 3 31 16.64	2.2915	14 54 24.0	14.290
23	11 47 31.41	2.1477	2 33 15.8	16.622	23	1 3 33 34.26	2.2959	15 8 38.7	14.200
24	11 49 40.31	2.1491	S. 2 49 52.8	16.611	24	1 3 35 52.15	2.3005	S. 15 22 48.0	14.108

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 21.					TUESDAY 23.				
0	13 35 52.15	2.3005	S. 15 22 48.0	14.108	0	15 31 47.43	2.5247	S. 24 24 10.6	7.894
1	13 38 10.32	2.3051	15 36 51.7	14.014	1	15 34 19.03	2.5286	24 31 59.4	7.732
2	13 40 28.76	2.3096	15 50 49.7	13.919	2	15 36 50.86	2.5323	24 39 38.5	7.570
3	13 42 47.47	2.3142	16 4 42.0	13.822	3	15 39 22.91	2.5360	24 47 7.8	7.406
4	13 45 6.46	2.3188	16 18 28.4	13.723	4	15 41 55.18	2.5396	24 54 27.2	7.241
5	13 47 25.73	2.3236	16 32 8.8	13.623	5	15 44 27.66	2.5431	25 1 36.7	7.075
6	13 49 45.29	2.3283	16 45 43.2	13.522	6	15 47 0.35	2.5465	25 8 36.2	6.908
7	13 52 5.13	2.3330	16 59 11.4	13.418	7	15 49 33.24	2.5498	25 15 25.6	6.740
8	13 54 25.25	2.3378	17 12 33.4	13.313	8	15 52 6.33	2.5530	25 22 5.0	6.572
9	13 56 45.66	2.3426	17 25 49.0	13.207	9	15 54 39.60	2.5560	25 28 34.3	6.403
10	13 59 6.36	2.3474	17 38 58.2	13.099	10	15 57 13.05	2.5591	25 34 53.4	6.233
11	14 1 27.35	2.3522	17 52 0.9	12.989	11	15 59 46.69	2.5621	25 41 2.2	6.062
12	14 3 48.63	2.3571	18 4 56.9	12.877	12	16 2 20.50	2.5648	25 47 0.8	5.890
13	14 6 10.20	2.3620	18 17 46.2	12.764	13	16 4 54.47	2.5675	25 52 49.0	5.718
14	14 8 32.07	2.3669	18 30 28.6	12.649	14	16 7 28.60	2.5702	25 58 26.9	5.545
15	14 10 54.23	2.3718	18 43 4.1	12.533	15	16 10 2.89	2.5727	26 3 54.4	5.371
16	14 13 16.69	2.3767	18 55 32.6	12.416	16	16 12 37.32	2.5750	26 9 11.4	5.196
17	14 15 39.44	2.3816	19 7 54.0	12.297	17	16 15 11.89	2.5772	26 14 17.9	5.022
18	14 18 2.48	2.3865	19 20 8.2	12.176	18	16 17 46.59	2.5794	26 19 14.0	4.847
19	14 20 25.82	2.3915	19 32 15.1	12.053	19	16 20 21.42	2.5814	26 23 59.5	4.670
20	14 22 49.46	2.3964	19 44 14.6	11.928	20	16 22 56.36	2.5833	26 28 34.4	4.492
21	14 25 13.39	2.4013	19 56 6.5	11.803	21	16 25 31.41	2.5851	26 32 58.6	4.315
22	14 27 37.62	2.4063	20 7 50.9	11.677	22	16 28 6.57	2.5867	26 37 12.2	4.137
23	14 30 2.15	2.4112	S. 20 19 27.7	11.548	23	16 30 41.82	2.5882	S. 26 41 15.1	3.960
MONDAY 22.					WEDNESDAY 24.				
0	14 32 26.97	2.4162	S. 20 30 56.7	11.418	0	16 33 17.15	2.5895	S. 26 45 7.4	3.782
1	14 34 52.09	2.4211	20 42 17.9	11.287	1	16 35 52.56	2.5908	26 48 48.9	3.603
2	14 37 17.50	2.4259	20 53 31.1	11.153	2	16 38 28.05	2.5920	26 52 19.7	3.423
3	14 39 43.20	2.4308	21 4 36.3	11.019	3	16 41 3.60	2.5930	26 55 39.7	3.243
4	14 42 9.19	2.4357	21 15 33.4	10.883	4	16 43 39.21	2.5939	26 58 48.9	3.064
5	14 44 35.48	2.4406	21 26 22.4	10.747	5	16 46 14.87	2.5946	27 1 47.4	2.885
6	14 47 2.06	2.4453	21 37 3.1	10.608	6	16 48 50.56	2.5951	27 4 35.1	2.704
7	14 49 28.92	2.4501	21 47 35.4	10.468	7	16 51 26.28	2.5956	27 7 11.9	2.523
8	14 51 56.07	2.4549	21 57 59.3	10.327	8	16 54 2.03	2.5960	27 9 37.9	2.343
9	14 54 23.51	2.4596	22 8 14.7	10.185	9	16 56 37.80	2.5962	27 11 53.1	2.162
10	14 56 51.23	2.4643	22 18 21.5	10.041	10	16 59 13.57	2.5968	27 13 57.4	1.982
11	14 59 19.23	2.4690	22 28 19.6	9.895	11	17 1 49.34	2.5960	27 15 50.9	1.802
12	15 1 47.1	2.4736	22 38 8.9	9.748	12	17 4 25.09	2.5957	27 17 33.6	1.621
13	15 4 16.06	2.4782	22 47 49.4	9.601	13	17 7 0.82	2.5953	27 19 5.4	1.440
14	15 6 44.89	2.4828	22 57 21.0	9.452	14	17 9 36.53	2.5949	27 20 26.4	1.259
15	15 9 13.99	2.4872	23 6 43.6	9.301	15	17 12 12.21	2.5944	27 21 36.5	1.078
16	15 11 43.35	2.4915	23 15 57.1	9.149	16	17 14 47.84	2.5934	27 22 35.8	0.899
17	15 14 12.97	2.4959	23 25 1.5	8.997	17	17 17 23.42	2.5925	27 23 24.4	0.719
18	15 16 42.86	2.5003	23 33 56.7	8.842	18	17 19 58.94	2.5914	27 24 2.1	0.539
19	15 19 13.01	2.5045	23 42 42.6	8.687	19	17 22 34.39	2.5902	27 24 29.0	0.359
20	15 21 43.40	2.5086	23 51 19.1	8.531	20	17 25 9.76	2.5888	27 24 45.2	0.180
21	15 24 14.04	2.5127	23 59 46.3	8.374	21	17 27 45.04	2.5873	27 24 50.6	- 0.001
22	15 26 44.93	2.5168	24 8 4.0	8.215	22	17 30 20.23	2.5857	27 24 45.3	+ 0.178
23	15 29 16.06	2.5208	24 16 12.1	8.055	23	17 32 55.32	2.5838	27 24 29.2	0.357
24	15 31 47.43	2.5247	S. 24 24 10.6	7.894	24	17 35 30.29	2.5818	S. 27 24 2.4	0.116

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 25.					SATURDAY 27.				
0	17 35 30.29	2.5818	S. 27 24 2.4	0.536	0	19 34 57.30	2.3598	S. 23 47 23.7	8.096
1	17 38 5.14	2.5798	27 23 24.9	0.713	1	19 37 18.70	2.3534	23 39 14.1	8.224
2	17 40 39.87	2.5777	27 22 36.8	0.890	2	19 39 39.71	2.3469	23 30 56.8	8.351
3	17 43 14.46	2.5753	27 21 38.1	1.067	3	19 42 0.33	2.3404	23 22 32.0	8.477
4	17 45 48.90	2.5728	27 20 28.8	1.243	4	19 44 20.56	2.3340	23 13 59.6	8.602
5	17 48 23.19	2.5702	27 19 9.0	1.419	5	19 46 40.41	2.3276	23 5 19.8	8.724
6	17 50 57.32	2.5674	27 17 38.6	1.594	6	19 48 59.87	2.3211	22 56 32.7	8.846
7	17 53 31.28	2.5646	27 15 57.7	1.768	7	19 51 18.94	2.3146	22 47 38.3	8.967
8	17 56 5.07	2.5616	27 14 6.4	1.942	8	19 53 37.62	2.3080	22 38 36.7	9.085
9	17 58 38.67	2.5584	27 12 4.7	2.115	9	19 55 55.90	2.3014	22 29 28.1	9.202
10	18 1 12.08	2.5552	27 9 52.6	2.287	10	19 58 13.79	2.2949	22 20 12.5	9.317
11	18 3 45.29	2.5518	27 7 30.2	2.458	11	20 0 31.29	2.2884	22 10 50.0	9.432
12	18 6 18.30	2.5484	27 4 57.6	2.629	12	20 2 48.40	2.2818	22 1 20.6	9.546
13	18 8 51.10	2.5447	27 2 14.7	2.800	13	20 5 5.11	2.2752	21 51 44.5	9.657
14	18 11 23.67	2.5409	26 59 21.6	2.969	14	20 7 21.43	2.2687	21 42 1.7	9.767
15	18 13 56.01	2.5370	26 56 18.4	3.138	15	20 9 37.36	2.2622	21 32 12.4	9.876
16	18 16 28.11	2.5331	26 53 5.1	3.306	16	20 11 52.90	2.2557	21 22 16.6	9.983
17	18 18 59.98	2.5291	26 49 41.7	3.473	17	20 14 8.04	2.2491	21 12 14.4	10.089
18	18 21 31.60	2.5248	26 46 8.3	3.639	18	20 16 22.79	2.2426	21 2 5.9	10.193
19	18 24 2.96	2.5205	26 42 25.0	3.804	19	20 18 37.15	2.2361	20 51 51.2	10.297
20	18 26 34.06	2.5162	26 38 31.8	3.967	20	20 20 51.12	2.2295	20 41 30.3	10.398
21	18 29 4.90	2.5117	26 34 28.9	4.130	21	20 23 4.69	2.2230	20 31 3.4	10.498
22	18 31 35.46	2.5070	26 30 16.2	4.292	22	20 25 17.88	2.2166	20 20 30.5	10.597
23	18 34 5.74	2.5023	S. 26 25 53.8	4.454	23	20 27 30.68	2.2101	S. 20 9 51.7	10.694
FRIDAY 26.					SUNDAY 28.				
0	18 36 35.74	2.4976	S. 26 21 21.7	4.613	0	20 29 43.09	2.2037	S. 19 59 7.2	10.789
1	18 39 5.45	2.4927	26 16 40.0	4.773	1	20 31 55.12	2.1972	19 48 17.0	10.883
2	18 41 34.86	2.4876	26 11 48.9	4.930	2	20 34 6.76	2.1908	19 37 21.2	10.977
3	18 44 3.96	2.4825	26 6 48.4	5.087	3	20 36 18.02	2.1844	19 26 19.8	11.069
4	18 46 32.76	2.4773	26 1 38.5	5.243	4	20 38 28.89	2.1781	19 15 12.9	11.159
5	18 49 1.24	2.4720	25 56 19.2	5.398	5	20 40 39.39	2.1718	19 4 0.7	11.247
6	18 51 29.40	2.4667	25 50 50.7	5.551	6	20 42 49.51	2.1655	18 52 43.3	11.334
7	18 53 57.24	2.4613	25 45 13.1	5.703	7	20 44 59.25	2.1593	18 41 20.7	11.420
8	18 56 24.75	2.4558	25 39 26.4	5.854	8	20 47 8.62	2.1531	18 29 52.9	11.505
9	18 58 51.94	2.4503	25 33 30.6	6.004	9	20 49 17.62	2.1469	18 18 20.1	11.587
10	19 1 18.79	2.4447	25 27 25.9	6.152	10	20 51 26.25	2.1407	18 6 42.4	11.669
11	19 3 45.30	2.4389	25 21 12.4	6.299	11	20 53 34.51	2.1346	17 54 59.8	11.749
12	19 6 11.46	2.4331	25 14 50.0	6.446	12	20 55 42.40	2.1285	17 43 12.5	11.827
13	19 8 37.27	2.4272	25 8 18.9	6.590	13	20 57 49.93	2.1223	17 31 20.5	11.905
14	19 11 2.73	2.4214	25 1 39.2	6.733	14	20 59 57.10	2.1165	17 19 23.9	11.982
15	19 13 27.84	2.4155	24 54 50.9	6.876	15	21 2 3.91	2.1105	17 7 22.7	12.057
16	19 15 52.59	2.4094	24 47 54.1	7.017	16	21 4 10.36	2.1046	16 55 17.1	12.130
17	19 18 16.97	2.4033	24 40 48.9	7.156	17	21 6 16.46	2.0987	16 43 7.1	12.202
18	19 20 40.99	2.3972	24 33 35.4	7.294	18	21 8 22.21	2.0929	16 30 52.9	12.272
19	19 23 4.64	2.3911	24 26 13.6	7.432	19	21 10 27.61	2.0872	16 18 34.5	12.342
20	19 25 27.92	2.3849	24 18 43.6	7.567	20	21 12 32.67	2.0814	16 6 11.9	12.410
21	19 27 50.83	2.3787	24 11 5.6	7.700	21	21 14 37.38	2.0757	15 53 45.3	12.477
22	19 30 13.36	2.3724	24 3 19.6	7.833	22	21 16 41.76	2.0701	15 41 14.7	12.542
23	19 32 35.52	2.3662	23 55 25.6	7.966	23	21 18 45.80	2.0646	15 28 40.3	12.605
24	19 34 57.30	2.3598	S. 23 47 23.7	8.096	24	21 20 49.51	2.0591	S. 15 16 2.1	12.667

GREENWICH MEAN TIME.

PHASES OF THE MOON.

	d	h	m
● New Moon Feb.	1	8	13.3
☾ First Quarter	9	7	25.2
○ Full Moon	16	22	11.0
☾ Last Quarter	23	15	43.6

☾ Apogee	Feb.	8	5.5
☾ Perigee		20	1.5

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
2	SUN W.	7 58 41	2993	9 29 2	3005	10 59 8	3018	12 28 58	3031
	VENUS E.	38 9 4	3043	36 39 45	3057	35 10 43	3072	33 41 59	3087
	α Arietis E.	74 26 23	2659	72 48 48	2672	71 11 30	2684	69 34 28	2695
	Aldebaran E.	106 25 12	2719	104 48 58	2730	103 12 58	2741	101 37 13	2752
3	SUN W.	19 54 5	3097	21 22 18	3111	22 50 14	3124	24 17 55	3138
	α Arietis E.	61 33 27	2760	59 58 6	2772	58 23 1	2785	56 48 13	2798
	Aldebaran E.	93 42 12	2811	92 7 58	2823	90 34 0	2835	89 0 18	2847
	MARS E.	98 34 40	2811	97 0 26	2824	95 26 29	2837	93 52 49	2850
4	SUN W.	31 32 19	3203	32 58 25	3215	34 24 16	3228	35 49 52	3241
	α Arietis E.	48 58 32	2864	47 25 27	2876	45 52 38	2890	44 20 6	2903
	Aldebaran E.	81 15 45	2910	79 43 39	2922	78 11 48	2935	76 40 13	2946
	MARS E.	86 8 36	2912	84 36 33	2925	83 4 46	2938	81 33 15	2950
5	SUN W.	42 54 17	3300	44 18 29	3310	45 42 29	3321	47 6 16	3332
	α Arietis E.	36 41 37	2969	35 10 46	2983	33 40 12	2997	32 9 56	3011
	Aldebaran E.	69 6 10	3008	67 36 7	3021	66 6 20	3032	64 36 47	3044
	MARS E.	73 59 22	3007	72 29 18	3018	70 59 27	3029	69 29 50	3039
	Pollux E.	111 21 12	2942	109 49 46	2951	108 18 32	2962	106 47 31	2970
6	SUN W.	54 2 14	3380	55 24 53	3388	56 47 23	3397	58 9 43	3404
	Aldebaran E.	57 12 40	3102	55 44 33	3114	54 16 41	3125	52 49 2	3138
	MARS E.	62 4 47	3087	60 36 21	3094	59 8 4	3102	57 39 57	3110
	Pollux E.	99 15 14	3014	97 45 18	3022	96 15 32	3029	94 45 55	3036
7	SUN W.	64 59 25	3436	66 21 1	3441	67 42 31	3446	69 3 56	3450
	α Pegasi W.	34 15 27	3639	35 33 19	3604	36 51 49	3572	38 10 54	3543
	VENUS W.	18 55 36	3528	20 15 29	3525	21 35 26	3523	22 55 25	3520
	Aldebaran E.	45 34 20	3197	44 8 7	3209	42 42 8	3221	41 16 24	3236
	MARS E.	50 21 35	3143	48 54 17	3148	47 27 6	3153	46 0 0	3158
	Pollux E.	87 19 50	3065	85 50 58	3069	84 22 11	3074	82 53 30	3078
8	SUN W.	75 50 3	3463	77 11 9	3463	78 32 14	3464	79 53 18	3463
	α Pegasi W.	44 53 22	3435	46 14 59	3418	47 36 55	3403	48 59 8	3388
	VENUS W.	29 35 48	3514	30 55 57	3512	32 16 8	3510	33 36 21	3508
	MARS E.	38 45 41	3173	37 18 59	3174	35 52 19	3176	34 25 41	3176
	Pollux E.	75 31 1	3090	74 2 39	3091	72 34 19	3091	71 5 59	3092
	Regulus E.	112 26 41	3078	110 58 4	3078	109 29 28	3078	108 0 52	3078
9	SUN W.	86 38 56	3454	88 0 11	3452	89 21 29	3447	90 42 52	3444
	α Pegasi W.	55 54 6	3325	57 17 48	3314	58 41 43	3303	60 5 51	3291
	VENUS W.	40 18 9	3492	41 38 42	3487	42 59 21	3482	44 20 5	3476
	Pollux E.	63 44 14	3086	62 15 47	3083	60 47 17	3080	59 18 43	3077
	Regulus E.	100 37 39	3070	99 8 53	3068	97 40 4	3064	96 11 10	3060
10	SUN W.	97 31 12	3413	98 53 14	3405	100 15 25	3397	101 37 45	3388
	α Pegasi W.	67 9 48	3236	68 35 14	3225	70 0 53	3214	71 26 46	3203
	VENUS W.	51 5 31	3441	52 27 1	3433	53 48 40	3423	55 10 30	3415
	Pollux E.	51 54 39	3053	50 25 32	3047	48 56 17	3040	47 26 54	3034
	Regulus E.	88 45 13	3032	87 15 40	3025	85 45 58	3018	84 16 7	3009
	JUPITER E.	97 10 52	2993	95 40 30	2985	94 9 59	2978	92 39 19	2970

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
2	SUN W.	13 58 32	3044	15 27 50	3058	16 56 51	3071	18 25 36	3084
	VENUS E.	32 13 33	3101	30 45 25	3118	29 17 37	3133	27 50 8	3150
	α Arietis E.	67 57 42	2708	66 21 13	2721	64 45 1	2734	63 9 6	2746
	Aldebaran E.	100 1 42	2763	98 26 26	2775	96 51 26	2787	95 16 41	2799
3	SUN W.	25 45 19	3151	27 12 27	3163	28 39 20	3177	30 5 57	3189
	α Arietis E.	55 13 43	2811	53 39 30	2825	52 5 34	2838	50 31 55	2850
	Aldebaran E.	87 26 51	2860	85 53 41	2872	84 20 46	2885	82 48 8	2897
	MARS E.	92 19 26	2862	90 46 19	2876	89 13 29	2888	87 40 55	2900
4	SUN W.	37 15 13	3253	38 40 20	3265	40 5 13	3276	41 29 52	3288
	α Arietis E.	42 47 51	2916	41 15 52	2929	39 44 10	2942	38 12 45	2956
	Aldebaran E.	75 8 53	2939	73 37 49	2972	72 7 1	2984	70 36 28	2996
	MARS E.	80 1 59	2962	78 30 58	2973	77 0 12	2985	75 29 40	2996
5	SUN W.	48 29 50	3342	49 53 13	3352	51 16 24	3362	52 39 24	3371
	α Arietis E.	30 39 57	3026	29 10 17	3041	27 40 55	3056	26 11 52	3073
	Aldebaran E.	63 7 29	3056	61 38 25	3068	60 9 36	3079	58 41 1	3091
	MARS E.	68 0 25	3049	66 31 13	3059	65 2 13	3068	63 33 24	3078
	Pollux E.	105 16 41	2980	103 46 3	2989	102 15 36	2997	100 45 20	3005
6	SUN W.	59 31 55	3412	60 53 58	3418	62 15 54	3424	63 37 43	3431
	Aldebaran E.	51 21 38	3148	49 54 27	3161	48 27 31	3172	47 0 48	3184
	MARS E.	56 12 0	3118	54 44 12	3124	53 16 32	3131	51 49 0	3137
	Pollux E.	93 16 27	3043	91 47 7	3048	90 17 54	3055	88 48 49	3060
7	SUN W.	70 25 16	3454	71 46 32	3456	73 7 45	3459	74 28 55	3461
	α Pegasi W.	39 30 31	3516	40 50 37	3493	42 11 9	3471	43 32 5	3453
	VENUS W.	24 15 27	3519	25 35 30	3517	26 55 35	3516	28 15 41	3515
	Aldebaran E.	39 50 57	3250	38 25 47	3265	37 0 54	3281	35 36 20	3299
	MARS E.	44 33 0	3161	43 6 4	3165	41 39 13	3168	40 12 25	3171
	Pollux E.	81 24 53	3081	79 56 20	3084	78 27 51	3087	76 59 25	3088
8	SUN W.	81 14 23	3463	82 35 29	3462	83 56 36	3460	85 17 45	3458
	α Pegasi W.	50 21 38	3575	51 44 23	3562	53 7 23	3550	54 30 37	3537
	VENUS W.	34 56 36	3506	36 16 54	3503	37 37 15	3499	38 57 40	3496
	MARS E.	32 59 3	3177	31 32 26	3177	30 5 49	3176	28 39 11	3176
	Pollux E.	69 37 40	3092	68 9 21	3091	66 41 0	3090	65 12 38	3088
	Regulus E.	106 32 16	3078	105 3 39	3077	103 35 1	3075	102 6 21	3073
9	SUN W.	92 4 19	3438	93 25 52	3432	94 47 32	3427	96 9 18	3420
	α Pegasi W.	61 30 13	3280	62 54 48	3270	64 19 35	3259	65 44 35	3247
	VENUS W.	45 40 56	3471	47 1 53	3463	48 22 58	3457	49 44 10	3449
	Pollux E.	57 50 5	3073	56 21 22	3069	54 52 34	3064	53 23 40	3058
	Regulus E.	94 42 11	3056	93 13 7	3050	91 43 56	3044	90 14 38	3039
10	SUN W.	103 0 15	3379	104 22 56	3370	105 45 47	3359	107 8 50	3349
	α Pegasi W.	72 52 52	3191	74 19 12	3179	75 45 46	3168	77 12 34	3156
	VENUS W.	56 32 30	3405	57 54 41	3394	59 17 4	3383	60 39 40	3372
	Pollux E.	45 57 23	3026	44 27 43	3019	42 57 54	3012	41 27 56	3004
	Regulus E.	82 46 6	3001	81 15 55	2992	79 45 32	2983	78 14 58	2973
	JUPITER E.	91 8 29	2962	89 37 28	2953	88 6 16	2944	86 34 53	2934

GREENWICH MEAN TIME.										
LUNAR DISTANCES.										
Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
11	SUN	W.	108 32 5	3338	109 55 33	3326	111 19 14	3314	112 43 9	3302
	α Pegasi	W.	78 39 36	3143	80 6 53	3131	81 34 25	3119	83 2 11	3106
	VENUS	W.	62 2 28	3360	63 25 30	3349	64 48 45	3336	66 12 15	3323
	α Arietis	W.	35 31 38	3004	37 1 46	2991	38 32 10	2977	40 2 51	2963
	Pollux	E.	39 57 48	2996	38 27 30	2988	36 57 2	2979	35 26 23	2971
	Regulus	E.	76 44 11	2963	75 13 12	2953	73 42 0	2942	72 10 34	2931
	JUPITER	E.	85 3 17	2924	83 31 29	2913	81 59 27	2902	80 27 11	2891
12	α Pegasi	W.	90 24 56	3043	91 54 16	3029	93 23 53	3016	94 53 46	3003
	VENUS	W.	73 13 39	3253	74 38 46	3238	76 4 10	3222	77 29 53	3207
	α Arietis	W.	47 40 40	2893	49 13 8	2879	50 45 54	2864	52 18 59	2848
	Regulus	E.	64 29 41	2869	62 56 42	2855	61 23 26	2842	59 49 52	2828
	JUPITER	E.	72 42 9	2831	71 8 21	2817	69 34 15	2804	67 59 52	2790
13	VENUS	W.	84 43 12	3125	86 10 51	3108	87 38 51	3091	89 7 12	3073
	α Arietis	W.	60 9 20	2772	61 44 25	2756	63 19 51	2740	64 55 38	2724
	Aldebaran	W.	29 26 46	3047	30 56 0	3005	32 26 6	2968	33 56 59	2933
	MARS	W.	20 32 42	2867	22 5 43	2850	23 39 6	2833	25 12 51	2816
	Regulus	E.	51 57 27	2756	50 22 1	2740	48 46 14	2725	47 10 7	2710
	JUPITER	E.	60 3 22	2719	58 27 7	2704	56 50 32	2689	55 13 37	2674
14	α Arietis	W.	72 59 52	2643	74 37 48	2628	76 16 5	2611	77 54 45	2596
	Aldebaran	W.	41 41 41	2785	43 16 28	2761	44 51 47	2737	46 27 38	2713
	MARS	W.	33 7 6	2732	34 43 3	2716	36 19 22	2699	37 56 3	2684
	Regulus	E.	39 4 24	2632	37 26 12	2617	35 47 40	2601	34 8 46	2586
	JUPITER	E.	47 3 57	2599	45 25 0	2583	43 45 42	2569	42 6 4	2553
	Spica	E.	93 7 32	2632	91 29 21	2617	89 50 49	2601	88 11 55	2585
15	α Arietis	W.	86 13 28	2517	87 54 17	2502	89 35 28	2487	91 16 59	2472
	Aldebaran	W.	54 34 22	2608	56 13 6	2588	57 52 17	2570	59 31 53	2551
	MARS	W.	46 4 51	2604	47 43 41	2588	49 22 52	2573	51 2 24	2559
	Spica	E.	79 52 3	2507	78 11 0	2493	76 29 37	2478	74 47 53	2463
16	Aldebaran	W.	67 55 57	2470	69 37 53	2454	71 20 11	2440	73 2 49	2426
	MARS	W.	59 25 6	2487	61 6 37	2475	62 48 26	2461	64 30 34	2449
	Pollux	W.	25 15 8	2460	26 57 17	2438	28 39 57	2419	30 23 5	2401
	Spica	E.	66 14 8	2394	64 30 25	2381	62 46 23	2368	61 2 3	2356
	SATURN	E.	104 11 5	2436	102 28 21	2422	100 45 17	2408	99 1 54	2396
	17	Aldebaran	W.	81 40 38	2365	83 25 3	2355	85 9 43	2344	86 54 38	2335
MARS		W.	73 5 26	2392	74 49 12	2382	76 33 12	2373	78 17 26	2364
Pollux		W.	39 4 40	2326	40 50 1	2314	42 35 40	2302	44 21 36	2292
Spica		E.	52 16 10	2302	50 30 13	2292	48 44 2	2283	46 57 37	2274
SATURN		E.	90 20 36	2338	88 35 32	2328	86 50 13	2319	85 4 41	2309
Antares		E.	98 4 8	2293	96 17 58	2283	94 31 34	2274	92 44 56	2264
18		Aldebaran	W.	95 42 18	2258	97 28 21	2291	99 14 33	2287	101 0 52	2283
	MARS	W.	87 1 39	2326	88 47 1	2320	90 32 32	2313	92 18 12	2309
	Pollux	W.	53 14 54	2247	55 2 12	2240	56 49 40	2233	58 37 19	2227
	Spica	E.	38 2 42	2240	36 15 14	2235	34 27 39	2231	32 39 57	2227
	SATURN	E.	76 13 56	2272	74 27 16	2267	72 40 28	2262	70 53 32	2257
	Antares	E.	83 48 36	2226	82 0 47	2220	80 12 49	2214	78 24 42	2208

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LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
11	SUN	W.	114 7 18	3289	115 31 42	3276	116 56 21	3263	118 21 16	3248
	α Pegasi	W.	84 30 13	3094	85 58 31	3082	87 27 3	3068	88 55 52	3056
	VENUS	W.	67 36 0	3309	69 0 1	3296	70 24 17	3282	71 48 50	3268
	α Arietis	W.	41 33 50	2950	43 5 6	2936	44 36 39	2922	46 8 30	2907
	Pollux	E.	33 55 34	2963	32 24 35	2955	30 53 26	2947	29 22 7	2940
	Regulus	E.	70 38 54	2919	69 6 59	2907	67 34 49	2894	66 2 23	2882
	JUPITER	E.	78 54 41	2880	77 21 56	2868	75 48 56	2856	74 15 41	2843
12	α Pegasi	W.	96 23 55	2990	97 54 20	2977	99 25 2	2964	100 56 0	2951
	VENUS	W.	78 55 54	3191	80 22 14	3174	81 48 54	3158	83 15 53	3142
	α Arietis	W.	53 52 24	2834	55 26 8	2818	57 0 12	2803	58 34 36	2788
	Regulus	E.	58 16 0	2814	56 41 50	2799	55 7 21	2785	53 32 34	2770
	JUPITER	E.	66 25 11	2776	64 50 12	2762	63 14 54	2748	61 39 18	2733
13	VENUS	W.	90 35 54	3056	92 4 57	3039	93 34 22	3022	95 4 8	3004
	α Arietis	W.	66 31 46	2708	68 8 15	2692	69 45 6	2676	71 22 18	2660
	Aldebaran	W.	35 28 36	2900	37 0 55	2886	38 33 53	2840	40 7 29	2812
	MARS	W.	26 46 58	2799	28 21 27	2782	29 56 18	2766	31 31 31	2749
	Regulus	E.	45 33 40	2694	43 56 52	2679	42 19 44	2663	40 42 14	2648
	JUPITER	E.	53 36 22	2658	51 58 46	2643	50 20 50	2629	48 42 34	2613
14	α Arietis	W.	79 33 46	2580	81 13 9	2564	82 52 54	2548	84 33 0	2533
	Aldebaran	W.	48 4 1	2691	49 40 53	2669	51 18 15	2648	52 56 5	2628
	MARS	W.	39 33 5	2667	41 10 29	2651	42 48 15	2635	44 26 22	2619
	Regulus	E.	32 29 32	2571	30 49 57	2556	29 10 1	2541	27 29 45	2527
	JUPITER	E.	40 26 5	2539	38 45 46	2525	37 5 8	2511	35 24 10	2497
	Spica	E.	86 32 40	2569	84 53 3	2553	83 13 4	2538	81 32 44	2523
15	α Arietis	W.	92 58 51	2458	94 41 4	2444	96 23 36	2430	98 6 28	2417
	Aldebaran	W.	61 11 55	2534	62 52 21	2517	64 33 10	2501	66 14 22	2485
	MARS	W.	52 42 16	2543	54 22 29	2529	56 3 2	2513	57 43 54	2501
	Spica	E.	73 5 48	2448	71 23 22	2435	69 40 37	2421	67 57 32	2408
16	Aldebaran	W.	74 45 46	2413	76 29 2	2400	78 12 37	2388	79 56 29	2376
	MARS	W.	66 12 59	2437	67 55 41	2425	69 38 40	2414	71 21 55	2403
	Pollux	W.	32 6 39	2384	33 50 37	2368	35 34 57	2354	37 19 38	2339
	Spica	E.	59 17 25	2344	57 32 30	2333	55 47 19	2322	54 1 52	2312
	SATURN	E.	97 18 13	2385	95 34 14	2371	93 49 58	2359	92 5 25	2348
17	Aldebaran	W.	88 39 46	2326	90 25 7	2318	92 10 40	2311	93 56 24	2304
	MARS	W.	80 1 53	2355	81 46 33	2347	83 31 24	2339	85 16 26	2332
	Pollux	W.	46 7 47	2282	47 54 13	2272	49 40 54	2265	51 27 48	2255
	Spica	E.	45 11 0	2266	43 24 11	2259	41 37 11	2252	39 50 1	2246
	SATURN	E.	83 18 55	2301	81 32 57	2293	79 46 47	2285	78 0 26	2279
	Antares	E.	90 58 4	2256	89 11 0	2247	87 23 43	2240	85 36 15	2233
18	Aldebaran	W.	102 47 17	2279	104 33 48	2276	106 20 23	2273	108 7 2	2271
	MARS	W.	94 3 59	2304	95 49 53	2300	97 35 53	2296	99 21 59	2293
	Pollux	W.	60 25 6	2222	62 13 1	2216	64 1 4	2212	65 49 13	2208
	Spica	E.	30 52 10	2225	29 4 19	2223	27 16 25	2222	25 28 30	2222
	SATURN	E.	69 6 29	2253	67 19 20	2250	65 32 7	2247	63 44 50	2245
	Antares	E.	76 36 27	2204	74 48 5	2199	72 59 36	2196	71 11 2	2192

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LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
19	Pollux W.	67 37 28	2206	69 25 47	2202	71 14 11	2200	73 2 38	2198
	Regulus W.	30 36 21	2196	32 24 55	2193	34 13 33	2190	36 2 15	2189
	JUPITER W.	23 28 24	2190	25 17 7	2183	27 6 0	2177	28 55 2	2172
	SATURN E.	61 57 30	2244	60 10 8	2243	58 22 44	2243	56 35 21	2243
	Antares E.	69 22 23	2190	67 33 40	2187	65 44 53	2185	63 56 3	2184
20	Pollux W.	82 5 17	2198	83 53 48	2198	85 42 18	2200	87 30 45	2202
	Regulus W.	45 6 9	2187	46 54 56	2188	48 43 42	2190	50 32 25	2191
	JUPITER W.	38 1 35	2161	39 51 1	2161	41 40 27	2162	43 29 52	2163
	SATURN E.	47 38 57	2258	45 51 55	2263	44 5 1	2269	42 18 16	2276
	Antares E.	54 51 37	2184	53 2 45	2184	51 13 54	2186	49 25 6	2188
21	Pollux W.	96 32 7	2218	98 20 8	2222	100 8 3	2227	101 55 51	2232
	Regulus W.	59 35 10	2206	61 23 28	2210	63 11 41	2214	64 59 47	2219
	JUPITER W.	52 36 20	2175	54 25 25	2178	56 14 25	2182	58 3 19	2186
	Antares E.	40 22 2	2204	38 33 40	2208	36 45 24	2212	34 57 15	2217
	α Aquilæ E.	94 37 56	2255	93 4 39	2257	91 31 25	2260	89 58 15	2265
	SUN E.	125 11 25	2318	123 30 37	2322	121 49 55	2327	120 9 20	2332
22	Regulus W.	73 58 25	2246	75 45 44	2252	77 32 54	2258	79 19 55	2265
	JUPITER W.	67 6 5	2212	68 54 15	2218	70 42 16	2224	72 30 8	2231
	α Aquilæ E.	82 14 31	2209	80 42 23	2222	79 10 32	2236	77 38 59	2252
	SUN E.	111 48 14	2361	110 8 26	2368	108 28 47	2374	106 49 17	2382
23	Regulus W.	88 12 31	2300	89 58 31	2307	91 44 21	2314	93 30 0	2322
	JUPITER W.	81 27 2	2264	83 13 54	2271	85 0 36	2279	86 47 7	2286
	Spica W.	34 13 20	2313	35 59 1	2320	37 44 32	2326	39 29 54	2333
	α Aquilæ E.	70 6 51	2305	68 37 46	2308	67 9 13	2309	65 41 14	2318
	SUN E.	98 34 16	2619	96 55 47	2626	95 17 28	2635	93 39 21	2643
24	Regulus W.	102 15 29	2360	104 0 1	2368	105 44 22	2375	107 28 32	2384
	JUPITER W.	95 36 57	2324	97 22 22	2332	99 7 35	2339	100 52 37	2348
	Spica W.	48 14 16	2367	49 58 38	2375	51 42 49	2382	53 26 49	2389
	SUN E.	85 31 28	2684	83 54 27	2693	82 17 38	2701	80 41 0	2710
25	Spica W.	62 4 9	2428	63 47 4	2436	65 29 47	2443	67 12 20	2452
	Antares W.	16 10 59	2422	17 54 2	2430	19 36 54	2438	21 19 35	2446
	SUN E.	72 40 42	2753	71 5 13	2762	69 29 55	2771	67 54 49	2779
26	Spica W.	75 42 16	2491	77 23 42	2499	79 4 56	2507	80 46 0	2515
	SATURN W.	37 54 15	2581	39 33 36	2585	41 12 55	2585	42 52 10	2588
	Antares W.	29 50 9	2486	31 31 42	2494	33 13 4	2502	34 54 15	2510
	SUN E.	60 2 10	2824	58 28 13	2832	56 54 27	2842	55 20 53	2851
27	Spica W.	89 8 29	2555	90 48 26	2564	92 28 11	2572	94 7 45	2580
	SATURN W.	51 7 7	2612	52 45 46	2617	54 24 18	2623	56 2 42	2629
	Antares W.	43 17 21	2551	44 57 24	2559	46 37 16	2566	48 16 57	2574
	SUN E.	47 35 56	2895	46 3 31	2905	44 31 18	2914	42 59 17	2924
28	SATURN W.	64 12 29	2663	65 49 59	2670	67 27 19	2678	69 4 29	2685
	Antares W.	56 32 34	2615	58 11 8	2624	59 49 30	2632	61 27 41	2641
	SUN E.	35 22 11	2972	33 51 23	2981	32 20 47	2992	30 50 24	3002

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LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
19	Pollux	W.	74 51 8	2198	76 39 39	2196	78 28 12	2196	80 16 45	2197
	Regulus	W.	37 50 59	2188	39 39 45	2186	41 28 33	2186	43 17 21	2186
	JUPITER	W.	30 44 12	2169	32 33 27	2165	34 22 47	2163	36 12 10	2162
	SATURN	E.	54 47 58	2245	53 0 37	2247	51 13 19	2249	49 26 5	2253
	Antares	E.	62 7 11	2183	60 18 18	2182	58 29 24	2182	56 40 30	2183
20	Pollux	W.	89 19 10	2204	91 7 31	2207	92 55 48	2210	94 44 0	2214
	Regulus	W.	52 21 6	2194	54 9 43	2196	55 58 17	2199	57 46 46	2202
	JUPITER	W.	45 19 15	2165	47 8 36	2166	48 57 55	2169	50 47 10	2172
	SATURN	E.	40 31 41	2285	38 45 19	2294	36 59 11	2306	35 13 20	2318
	Antares	E.	47 36 21	2190	45 47 39	2194	43 59 2	2196	42 10 29	2200
21	Pollux	W.	103 43 31	2237	105 31 3	2242	107 18 28	2248	109 5 44	2253
	Regulus	W.	66 47 46	2224	68 35 38	2229	70 23 22	2235	72 10 58	2241
	JUPITER	W.	59 52 7	2191	61 40 48	2196	63 29 21	2201	65 17 47	2206
	Antares	E.	33 9 13	2223	31 21 19	2227	29 33 32	2233	27 45 53	2239
	α Aquilæ	E.	88 25 11	2271	86 52 15	2278	85 19 28	2287	83 46 53	2298
	SUN	E.	118 28 51	2538	116 48 30	2543	115 8 16	2549	113 28 11	2555
22	Regulus	W.	81 6 46	2272	82 53 27	2278	84 39 59	2285	86 26 20	2292
	JUPITER	W.	74 17 50	2237	76 5 23	2243	77 52 46	2250	79 39 59	2257
	α Aquilæ	E.	76 7 46	2969	74 36 55	2988	73 6 27	3009	71 36 25	3031
	SUN	E.	105 9 57	2589	103 30 47	2596	101 51 46	2604	100 12 56	2611
23	Regulus	W.	95 15 28	2329	97 0 45	2337	98 45 51	2345	100 30 46	2353
	JUPITER	W.	88 33 27	2294	90 19 36	2301	92 5 34	2309	93 51 21	2316
	Spica	W.	41 15 6	2339	43 0 8	2346	44 45 1	2353	46 29 44	2360
	α Aquilæ	E.	64 13 51	3171	62 47 7	3206	61 21 5	3243	59 55 47	3283
	SUN	E.	92 1 24	2652	90 23 39	2659	88 46 4	2667	87 8 40	2676
24	Regulus	W.	109 12 30	2391	110 56 17	2400	112 39 52	2408	114 23 16	2416
	JUPITER	W.	102 37 27	2355	104 22 6	2364	106 6 33	2371	107 50 49	2380
	Spica	W.	55 10 39	2397	56 54 18	2405	58 37 46	2412	60 21 3	2420
	SUN	E.	79 4 33	2719	77 28 18	2727	75 52 14	2736	74 16 22	2745
25	Spica	W.	68 54 41	2459	70 36 52	2467	72 18 51	2475	74 0 39	2483
	Antares	W.	23 2 4	2454	24 44 22	2462	26 26 29	2470	28 8 25	2478
	SUN	E.	66 19 54	2768	64 45 11	2797	63 10 39	2806	61 36 19	2815
26	Spica	W.	82 26 52	2523	84 7 33	2531	85 48 3	2539	87 28 22	2548
	SATURN	W.	44 31 21	2592	46 10 27	2596	47 49 27	2601	49 28 20	2606
	Antares	W.	36 35 15	2518	38 16 3	2526	39 56 40	2534	41 37 6	2542
	SUN	E.	53 47 31	2859	52 14 20	2869	50 41 21	2877	49 8 33	2886
27	Spica	W.	95 47 8	2588	97 26 20	2596	99 5 20	2604	100 44 9	2612
	SATURN	W.	57 40 57	2636	59 19 3	2642	60 57 1	2649	62 34 50	2656
	Antares	W.	49 56 27	2583	51 35 46	2591	53 14 53	2599	54 53 49	2607
	SUN	E.	41 27 28	2933	39 55 51	2942	38 24 25	2952	36 53 12	2962
28	SATURN	W.	70 41 29	2692	72 18 19	2701	73 54 58	2708	75 31 27	2716
	Antares	W.	63 5 40	2649	64 43 28	2658	66 21 4	2666	67 58 29	2675
	SUN	E.	29 20 14	3013	27 50 17	3024	26 20 34	3035	24 51 5	3047

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		^h ^m ^s	^s	[°] ['] ["]	["]	['] ["]	^s	^m ^s	^s
Mon.	1	22 50 39.55	9.353	S. 7 21 58.2	+57.15	16 10.28	65.40	12 25.69	0.502
Tues.	2	22 54 23.78	9.333	6 59 3.4	57.41	16 10.03	65.33	12 13.40	0.522
Wed.	3	22 58 7.54	9.314	6 36 2.6	57.65	16 9.79	65.26	12 0.64	0.541
Thur.	4	23 1 50.83	9.295	6 12 56.3	+57.87	16 9.54	65.20	11 47.41	0.560
Frid.	5	23 5 33.68	9.276	5 49 44.9	58.07	16 9.29	65.13	11 33.74	0.579
Sat.	6	23 9 16.10	9.259	5 26 28.9	58.25	16 9.03	65.07	11 19.63	0.596
SUN.	7	23 12 58.10	9.242	5 3 8.6	+58.42	16 8.78	65.02	11 5.13	0.613
Mon.	8	23 16 39.70	9.226	4 39 44.5	58.57	16 8.53	64.96	10 50.22	0.629
Tues.	9	23 20 20.93	9.210	4 16 16.9	58.71	16 8.27	64.91	10 34.94	0.644
Wed.	10	23 24 1.79	9.196	3 52 46.4	+58.83	16 8.02	64.86	10 19.29	0.659
Thur.	11	23 27 42.31	9.182	3 29 13.0	58.93	16 7.76	64.81	10 3.30	0.673
Frid.	12	23 31 22.50	9.169	3 5 37.5	59.02	16 7.50	64.77	9 46.98	0.686
Sat.	13	23 35 2.40	9.156	2 41 59.9	+59.10	16 7.24	64.73	9 30.37	0.698
SUN.	14	23 38 42.01	9.145	2 18 20.8	59.16	16 6.98	64.69	9 13.48	0.709
Mon.	15	23 42 21.37	9.135	1 54 40.5	59.20	16 6.72	64.66	8 56.33	0.719
Tues.	16	23 46 0.49	9.126	1 30 59.3	+59.23	16 6.45	64.63	8 38.95	0.728
Wed.	17	23 49 39.40	9.117	1 7 17.5	59.24	16 6.18	64.60	8 21.36	0.737
Thur.	18	23 53 18.13	9.110	0 43 35.5	59.24	16 5.91	64.57	8 3.58	0.744
Frid.	19	23 56 56.70	9.104	S. 0 19 53.7	+59.23	16 5.63	64.55	7 45.64	0.750
Sat.	20	0 0 35.12	9.099	N. 0 3 47.7	59.21	16 5.36	64.53	7 27.56	0.755
SUN.	21	0 4 13.43	9.094	0 27 28.3	59.17	16 5.08	64.51	7 9.37	0.760
Mon.	22	0 7 51.65	9.091	0 51 7.8	+59.12	16 4.80	64.50	6 51.08	0.764
Tues.	23	0 11 29.81	9.089	1 14 45.8	59.05	16 4.52	64.49	6 32.73	0.766
Wed.	24	0 15 7.91	9.088	1 38 22.0	58.97	16 4.24	64.48	6 14.34	0.767
Thur.	25	0 18 46.00	9.087	2 1 56.1	+58.87	16 3.95	64.48	5 55.92	0.768
Frid.	26	0 22 24.08	9.087	2 25 27.6	58.76	16 3.67	64.48	5 37.50	0.767
Sat.	27	0 26 2.18	9.088	2 48 56.3	58.63	16 3.39	64.48	5 19.10	0.766
SUN.	28	0 29 40.32	9.090	3 12 21.7	+58.49	16 3.10	64.48	5 0.73	0.764
Mon.	29	0 33 18.51	9.093	3 35 43.5	58.33	16 2.82	64.49	4 42.42	0.761
Tues.	30	0 36 56.77	9.096	3 59 1.3	58.15	16 2.54	64.50	4 24.18	0.758
Wed.	31	0 40 35.13	9.100	4 22 14.7	57.96	16 2.26	64.51	4 6.03	0.754
Thur.	32	0 44 13.59	9.105	N. 4 45 23.4	+57.76	16 1.98	64.53	3 47.99	0.749

NOTE.—The mean time of semidiameter passing may be found by subtracting 0.18 from the sidereal time.

The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing; north declinations increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
Mon.	1	^h 22 ^m 50 ^s 37.61	9.355	S. 7 22 10.1	+57.16	^m 12 ^s 25.79	0.502	^h 22 ^m 38 ^s 11.82
Tues.	2	22 54 21.88	9.335	6 59 15.1	57.41	12 13.51	0.522	22 42 8.37
Wed.	3	22 58 5.68	9.315	6 36 14.2	57.65	12 0.75	0.541	22 46 4.93
Thur.	4	23 1 49.01	9.296	6 13 7.7	+57.87	11 47.53	0.560	22 50 1.48
Frid.	5	23 5 31.89	9.278	5 49 56.2	58.08	11 33.86	0.579	22 53 58.03
Sat.	6	23 9 14.34	9.261	5 26 39.9	58.26	11 19.75	0.597	22 57 54.59
SUN.	7	23 12 56.39	9.244	5 3 19.5	+58.43	11 5.25	0.613	23 1 51.14
Mon.	8	23 16 38.03	9.228	4 39 55.1	58.58	10 50.34	0.629	23 5 47.70
Tues.	9	23 20 19.30	9.212	4 16 27.3	58.72	10 35.05	0.644	23 9 44.25
Wed.	10	23 24 0.20	9.197	3 52 56.5	+58.84	10 19.40	0.659	23 13 40.80
Thur.	11	23 27 40.77	9.183	3 29 23.0	58.95	10 3.41	0.673	23 17 37.36
Frid.	12	23 31 21.01	9.170	3 5 47.1	59.04	9 47.10	0.686	23 21 33.91
Sat.	13	23 35 0.95	9.158	2 42 9.4	+59.11	9 30.48	0.698	23 25 30.46
SUN.	14	23 38 40.61	9.147	2 18 30.0	59.17	9 13.59	0.709	23 29 27.02
Mon.	15	23 42 20.01	9.137	1 54 49.4	59.21	8 56.44	0.719	23 33 23.57
Tues.	16	23 45 59.18	9.128	1 31 7.9	+59.24	8 39.06	0.728	23 37 20.12
Wed.	17	23 49 38.14	9.119	1 7 25.8	59.25	8 21.46	0.737	23 41 16.68
Thur.	18	23 53 16.91	9.112	0 43 43.5	59.26	8 3.68	0.745	23 45 13.23
Frid.	19	23 56 55.52	9.106	S. 0 20 1.4	+59.25	7 45.74	0.751	23 49 9.78
Sat.	20	0 0 33.99	9.101	N. 0 3 40.3	59.22	7 27.65	0.756	23 53 6.34
SUN.	21	0 4 12.35	9.096	0 27 21.2	59.18	7 9.46	0.760	23 57 2.89
Mon.	22	0 7 50.62	9.093	0 51 1.0	+59.13	6 51.17	0.763	0 0 59.44
Tues.	23	0 11 28.82	9.091	1 14 39.4	59.06	6 32.82	0.766	0 4 56.00
Wed.	24	0 15 6.97	9.090	1 38 15.9	58.98	6 14.42	0.768	0 8 52.55
Thur.	25	0 18 45.10	9.089	2 1 50.2	+58.88	5 56.00	0.768	0 12 49.10
Frid.	26	0 22 23.23	9.089	2 25 22.1	58.77	5 37.57	0.767	0 16 45.66
Sat.	27	0 26 1.38	9.090	2 48 51.0	58.64	5 19.16	0.766	0 20 42.21
SUN.	28	0 29 39.56	9.091	3 12 16.8	+58.50	5 0.79	0.764	0 24 38.77
Mon.	29	0 33 17.80	9.093	3 35 38.9	58.34	4 42.48	0.762	0 28 35.32
Tues.	30	0 36 56.11	9.096	3 58 57.0	58.16	4 24.24	0.759	0 32 31.87
Wed.	31	0 40 34.51	9.101	4 22 10.8	57.97	4 6.09	0.754	0 36 28.42
Thur.	32	0 44 13.02	9.107	N. 4 45 19.8	+57.77	3 48.04	0.749	0 40 24.98

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing; north declinations, increasing.

Diff. for 1 Hour,
+9'.8565.
(Table III.)

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ'					
1	60	341 12 21.8	12 0.5	150.44	— 0.22	9.9962767	+46.2	h m s 1 21 34.78
2	61	342 12 31.6	12 10.2	150.37	— 0.08	9.9963877	46.4	1 17 38.87
3	62	343 12 39.6	12 18.1	150.30	+ 0.04	9.9964993	46.6	1 13 42.96
4	63	344 12 45.8	12 24.2	150.22	+ 0.16	9.9966112	+46.8	1 9 47.06
5	64	345 12 50.1	12 28.4	150.14	0.25	9.9967235	46.9	1 5 51.15
6	65	346 12 52.3	12 30.5	150.05	0.32	9.9968361	47.1	1 1 55.24
7	66	347 12 52.6	12 30.7	149.96	+ 0.36	9.9969493	+47.2	0 57 59.33
8	67	348 12 50.6	12 28.6	149.87	0.37	9.9970628	47.4	0 54 3.42
9	68	349 12 46.5	12 24.3	149.78	0.35	9.9971769	47.6	0 50 7.52
10	69	350 12 40.2	12 17.9	149.69	+ 0.29	9.9972915	+47.9	0 46 11.61
11	70	351 12 31.7	12 9.3	149.60	0.22	9.9974069	48.2	0 42 15.70
12	71	352 12 20.9	11 58.4	149.51	+ 0.12	9.9975230	48.5	0 38 19.79
13	72	353 12 7.8	11 45.2	149.41	0.00	9.9976398	+48.9	0 34 23.89
14	73	354 11 52.4	11 29.7	149.32	— 0.13	9.9977576	49.3	0 30 27.98
15	74	355 11 35.0	11 12.2	149.23	0.26	9.9978765	49.7	0 26 32.07
16	75	356 11 15.3	10 52.4	149.14	— 0.39	9.9979963	+50.1	0 22 36.16
17	76	357 10 53.5	10 30.5	149.05	0.51	9.9981173	50.6	0 18 40.26
18	77	358 10 29.7	10 6.6	148.96	0.61	9.9982393	51.0	0 14 44.35
19	78	359 10 3.8	9 40.6	148.88	— 0.70	9.9983624	+51.5	0 10 48.44
20	79	0 9 35.9	9 12.6	148.80	0.75	9.9984866	51.9	0 6 52.53
21	80	1 9 6.2	8 42.8	148.72	0.78	9.9986116	52.3	{ 0 2 56.62 } 23 59 0.72
22	81	2 8 34.6	8 11.0	148.64	— 0.78	9.9987375	+52.6	23 55 4.81
23	82	3 8 1.1	7 37.4	148.57	0.75	9.9988641	52.9	23 51 8.90
24	83	4 7 26.0	7 2.2	148.49	0.69	9.9989913	53.1	23 47 12.99
25	84	5 6 49.0	6 25.1	148.42	— 0.60	9.9991188	+53.2	23 43 17.08
26	85	6 6 10.2	5 46.2	148.35	0.49	9.9992466	53.3	23 39 21.18
27	86	7 5 29.7	5 5.6	148.28	0.37	9.9993746	53.3	23 35 25.27
28	87	8 4 47.4	4 23.2	148.20	— 0.24	9.9995025	+53.2	23 31 29.36
29	88	9 4 3.4	3 39.1	148.12	— 0.11	9.9996300	53.1	23 27 33.46
30	89	10 3 17.4	2 53.0	148.04	+ 0.02	9.9997572	52.9	23 23 37.55
31	90	11 2 29.6	2 5.1	147.96	0.14	9.9998839	52.7	23 19 41.64
32	91	12 1 39.8	1 15.2	147.88	+ 0.23	0.0000100	+52.4	23 15 45.73
NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ' to the mean equinox of January 0 ^h .								Diff. for 1 Hour. —0 ^h .8296. (Table II.)

GREENWICH MEAN TIME.

Day of the Month.	THE MOON'S									
	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.	
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.	
1	15 25.0	15 21.0	56 28.2	-1.22	56 13.6	-1.22	h m 23 25.6	m 1.84	d 27.7	
2	15 17.1	15 13.2	55 59.0	1.20	55 44.7	1.18	6		28.7	
3	15 9.4	15 5.7	55 30.8	1.14	55 17.3	1.10	0 8.6	1.75	0.0	
4	15 2.2	14 58.9	55 4.4	-1.04	54 52.3	-0.97	0 50.0	1.71	1.0	
5	14 55.9	14 53.2	54 41.2	0.88	54 31.3	0.77	1 30.9	1.71	2.0	
6	14 50.8	14 48.9	54 22.7	0.65	54 15.6	0.51	2 12.3	1.75	3.0	
7	14 47.5	14 46.6	54 10.4	-0.35	54 7.1	-0.19	2 55.0	1.82	4.0	
8	14 46.3	14 46.5	54 5.9	-0.01	54 6.9	+0.18	3 39.8	1.91	5.0	
9	14 47.4	14 49.1	54 10.2	+0.38	54 16.1	0.59	4 27.0	2.02	6.0	
10	14 51.3	14 54.3	54 24.4	+0.80	54 35.3	+1.02	5 16.7	2.12	7.0	
11	14 58.0	15 2.3	54 48.8	1.23	55 4.8	1.43	6 8.6	2.19	8.0	
12	15 7.3	15 12.9	55 23.2	1.63	55 43.8	1.80	7 1.6	2.22	9.0	
13	15 19.1	15 25.8	56 6.5	+1.96	56 30.9	+2.10	7 54.7	2.20	10.0	
14	15 32.8	15 40.1	56 56.8	2.20	57 23.7	2.26	8 47.0	2.16	11.0	
15	15 47.6	15 55.0	57 51.0	2.28	58 18.3	2.25	9 38.1	2.10	12.0	
16	16 2.3	16 9.2	58 45.0	+2.18	59 10.5	+2.04	10 28.1	2.07	13.0	
17	16 15.6	16 21.4	59 34.0	1.86	59 55.1	1.63	11 17.6	2.07	14.0	
18	16 26.3	16 30.1	60 13.1	1.35	60 27.4	1.04	12 7.7	2.11	15.0	
19	16 33.0	16 34.7	60 38.0	+0.70	60 44.3	+0.35	12 59.4	2.20	16.0	
20	16 35.3	16 34.8	60 46.5	+0.01	60 44.5	-0.33	13 53.8	2.33	17.0	
21	16 33.2	16 30.6	60 38.5	-0.65	60 29.0	0.93	14 51.4	2.47	18.0	
22	16 27.1	16 22.9	60 16.2	-1.18	60 0.8	-1.38	15 52.0	2.57	19.0	
23	16 18.1	16 12.9	59 43.2	1.53	59 24.0	1.65	16 54.1	2.59	20.0	
24	16 7.3	16 1.6	59 3.6	1.73	58 42.5	1.77	17 55.5	2.51	21.0	
25	15 55.8	15 50.0	58 21.2	-1.77	58 0.0	-1.76	18 53.9	2.35	22.0	
26	15 44.3	15 38.8	57 39.0	1.72	57 18.7	1.66	19 48.0	2.16	23.0	
27	15 33.4	15 28.3	56 59.1	1.60	56 40.3	1.52	20 37.7	1.99	24.0	
28	15 23.5	15 18.9	56 22.6	-1.44	56 5.8	-1.36	21 23.6	1.85	25.0	
29	15 14.6	15 10.6	55 49.9	1.28	55 35.1	1.20	22 6.7	1.75	26.0	
30	15 6.8	15 3.3	55 21.2	1.11	55 8.4	1.03	22 48.1	1.70	27.0	
31	15 0.1	14 57.1	54 56.5	0.95	54 45.6	0.87	23 28.7	1.69	28.0	
32	14 54.4	14 51.9	54 35.6	-0.79	54 26.7	-0.70	6		29.0	

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 1.					WEDNESDAY 3.				
0	21 20 49.51	2.0591	S. 15 16 2.1	22.667	0	22 54 25.47	1.8657	S. 4 19 15.2	14.259
1	21 22 52.89	2.0536	15 3 20.2	12.729	1	22 56 17.34	1.8632	4 4 59.4	14.266
2	21 24 55.94	2.0482	14 50 34.6	12.739	2	22 58 9.06	1.8608	3 50 43.3	14.271
3	21 26 58.67	2.0428	14 37 45.5	12.847	3	23 0 0.64	1.8585	3 36 26.9	14.276
4	21 29 1.08	2.0375	14 24 52.9	12.905	4	23 1 52.08	1.8563	3 22 10.2	14.280
5	21 31 3.17	2.0322	14 11 56.9	12.962	5	23 3 43.40	1.8542	3 7 53.3	14.282
6	21 33 4.94	2.0269	13 58 57.5	13.017	6	23 5 34.59	1.8522	2 53 36.3	14.284
7	21 35 6.40	2.0218	13 45 54.9	13.069	7	23 7 25.66	1.8502	2 39 19.2	14.285
8	21 37 7.56	2.0168	13 32 49.2	13.121	8	23 9 16.61	1.8482	2 25 2.1	14.285
9	21 39 8.42	2.0118	13 19 40.3	13.173	9	23 11 7.44	1.8463	2 10 45.0	14.284
10	21 41 8.98	2.0068	13 6 28.4	13.222	10	23 12 58.16	1.8445	1 56 28.0	14.282
11	21 43 9.24	2.0019	12 53 13.6	13.271	11	23 14 48.78	1.8427	1 42 11.1	14.279
12	21 45 9.21	1.9971	12 39 55.9	13.318	12	23 16 39.29	1.8410	1 27 54.5	14.275
13	21 47 8.89	1.9923	12 26 35.4	13.364	13	23 18 29.70	1.8394	1 13 38.1	14.271
14	21 49 8.29	1.9876	12 13 12.2	13.409	14	23 20 20.02	1.8380	0 59 22.0	14.265
15	21 51 7.40	1.9829	11 59 46.3	13.453	15	23 22 10.26	1.8366	0 45 6.3	14.258
16	21 53 6.24	1.9783	11 46 17.8	13.496	16	23 24 0.41	1.8351	0 30 51.0	14.251
17	21 55 4.80	1.9737	11 32 46.8	13.537	17	23 25 50.47	1.8337	0 16 36.2	14.242
18	21 57 3.09	1.9693	11 19 13.4	13.577	18	23 27 40.45	1.8324	S. 0 2 21.9	14.233
19	21 59 1.12	1.9649	11 5 37.6	13.616	19	23 29 30.36	1.8312	N. 0 11 51.8	14.223
20	22 0 58.88	1.9605	10 51 59.5	13.653	20	23 31 20.20	1.8301	0 26 4.9	14.212
21	22 2 56.38	1.9562	10 38 19.2	13.689	21	23 33 9.97	1.8290	0 40 17.3	14.200
22	22 4 53.63	1.9521	10 24 36.8	13.725	22	23 34 59.68	1.8280	0 54 28.9	14.187
23	22 6 50.63	1.9479	S. 10 10 52.2	13.760	23	23 36 49.33	1.8271	N. 1 8 39.8	14.174
TUESDAY 2.					THURSDAY 4.				
0	22 8 47.37	1.9437	S. 9 57 5.6	13.792	0	23 38 38.93	1.8262	N. 1 22 49.8	14.159
1	22 10 43.87	1.9397	9 43 17.1	13.824	1	23 40 28.48	1.8254	1 36 58.9	14.144
2	22 12 40.14	1.9358	9 29 26.7	13.855	2	23 42 17.98	1.8246	1 51 7.1	14.128
3	22 14 36.17	1.9319	9 15 34.5	13.884	3	23 44 7.43	1.8239	2 5 14.3	14.111
4	22 16 31.97	1.9281	9 1 40.6	13.913	4	23 45 56.85	1.8233	2 19 20.4	14.093
5	22 18 27.54	1.9243	8 47 44.9	13.942	5	23 47 46.23	1.8227	2 33 25.5	14.075
6	22 20 22.89	1.9206	8 33 47.6	13.968	6	23 49 35.58	1.8222	2 47 29.4	14.055
7	22 22 18.02	1.9170	8 19 48.8	13.993	7	23 51 24.90	1.8218	3 1 32.1	14.034
8	22 24 12.93	1.9134	8 5 48.5	14.016	8	23 53 14.20	1.8215	3 15 33.5	14.013
9	22 26 7.63	1.9099	7 51 46.9	14.039	9	23 55 3.48	1.8212	3 29 33.7	13.992
10	22 28 2.12	1.9065	7 37 43.9	14.061	10	23 56 52.75	1.8210	3 43 32.5	13.968
11	22 29 56.41	1.9031	7 23 39.6	14.082	11	23 58 42.00	1.8208	3 57 29.9	13.944
12	22 31 50.50	1.8998	7 9 34.1	14.102	12	0 0 31.24	1.8206	4 11 25.8	13.920
13	22 33 44.39	1.8966	6 55 27.4	14.121	13	0 2 20.47	1.8206	4 25 20.3	13.895
14	22 35 38.09	1.8935	6 41 19.6	14.138	14	0 4 9.71	1.8207	4 39 13.2	13.868
15	22 37 31.61	1.8904	6 27 10.8	14.155	15	0 5 58.95	1.8208	4 53 4.5	13.841
16	22 39 24.94	1.8873	6 13 1.0	14.171	16	0 7 48.20	1.8209	5 6 54.1	13.814
17	22 41 18.09	1.8844	5 58 50.3	14.185	17	0 9 37.46	1.8211	5 20 42.1	13.786
18	22 43 11.07	1.8816	5 44 38.8	14.199	18	0 11 26.73	1.8213	5 34 28.4	13.757
19	22 45 3.88	1.8787	5 30 26.5	14.212	19	0 13 16.02	1.8217	5 48 12.9	13.726
20	22 46 56.52	1.8759	5 16 13.4	14.223	20	0 15 5.33	1.8221	6 1 55.5	13.695
21	22 48 48.99	1.8732	5 1 59.7	14.233	21	0 16 54.67	1.8226	6 15 36.3	13.664
22	22 50 41.30	1.8706	4 47 45.4	14.243	22	0 18 44.04	1.8231	6 29 15.2	13.631
23	22 52 33.46	1.8681	4 33 30.5	14.252	23	0 20 33.44	1.8236	6 42 52.0	13.597
24	22 54 25.47	1.8657	S. 4 19 15.2	14.259	24	0 22 22.87	1.8243	N. 6 56 26.8	13.563

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 5.					SUNDAY 7.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
1	0 22 22.87	1.8243	N. 6 56 26.8	13.583	1	1 51 45.20	1.9196	N. 16 53 43.8	11.035
2	0 24 12.35	1.8230	7 9 59.6	13.528	2	1 53 40.47	1.9228	17 4 43.8	10.963
3	0 26 1.87	1.8237	7 23 30.2	13.493	3	1 55 35.93	1.9260	17 15 39.4	10.891
4	0 27 51.43	1.8264	7 36 58.7	13.457	4	1 57 31.59	1.9292	17 26 30.7	10.818
5	0 29 41.04	1.8273	7 50 25.0	13.419	5	1 59 27.44	1.9325	17 37 17.6	10.745
6	0 31 30.71	1.8283	8 3 49.0	13.381	6	2 1 23.49	1.9358	17 48 0.1	10.671
7	0 33 20.44	1.8293	8 17 10.8	13.343	7	2 3 19.73	1.9391	17 58 38.1	10.596
8	0 35 10.23	1.8303	8 30 30.2	13.305	8	2 5 16.18	1.9426	18 9 11.6	10.521
9	0 37 0.08	1.8314	8 43 47.2	13.268	9	2 7 12.84	1.9460	18 19 40.6	10.445
10	0 38 50.00	1.8326	8 57 1.8	13.222	10	2 9 9.70	1.9494	18 30 5.0	10.367
11	0 40 40.00	1.8339	9 10 13.9	13.180	11	2 11 6.77	1.9529	18 40 24.7	10.289
12	0 42 30.07	1.8352	9 23 23.4	13.138	12	2 13 4.05	1.9564	18 50 39.7	10.211
13	0 44 20.22	1.8365	9 36 30.4	13.095	13	2 15 1.54	1.9600	19 0 50.0	10.133
14	0 46 10.45	1.8379	9 49 34.8	13.051	14	2 16 59.25	1.9636	19 10 55.5	10.058
15	0 48 0.77	1.8394	10 2 36.5	13.005	15	2 18 57.17	1.9672	19 20 56.2	9.971
16	0 49 51.18	1.8409	10 15 35.4	12.959	16	2 20 55.31	1.9708	19 30 52.0	9.889
17	0 51 41.68	1.8424	10 28 31.6	12.913	17	2 22 53.67	1.9746	19 40 42.9	9.807
18	0 53 32.27	1.8440	10 41 25.0	12.866	18	2 24 52.26	1.9783	19 50 28.8	9.724
19	0 55 22.96	1.8457	10 54 15.5	12.818	19	2 26 51.07	1.9820	20 0 9.7	9.640
20	0 57 13.75	1.8474	11 7 3.2	12.770	20	2 28 50.10	1.9858	20 9 45.6	9.555
21	0 59 4.65	1.8492	11 19 47.9	12.720	21	2 30 49.36	1.9895	20 19 16.3	9.469
22	1 0 55.66	1.8511	11 32 29.6	12.670	22	2 32 48.85	1.9934	20 28 41.9	9.383
23	1 2 46.78	1.8530	11 45 8.3	12.619	23	2 34 48.57	1.9972	20 38 2.3	9.296
24	1 4 38.02	1.8549	N. 11 57 43.9	12.568	24	2 36 48.52	2.0011	N. 20 47 17.4	9.208
SATURDAY 6.					MONDAY 8.				
0	1 6 29.37	1.8569	N. 12 10 16.4	12.516	0	2 38 48.70	2.0050	N. 20 56 27.3	9.120
1	1 8 20.85	1.8590	12 22 45.8	12.462	1	2 40 49.12	2.0089	21 5 31.8	9.031
2	1 10 12.45	1.8611	12 35 11.9	12.408	2	2 42 49.77	2.0128	21 14 31.0	8.942
3	1 12 4.18	1.8632	12 47 34.8	12.354	3	2 44 50.65	2.0167	21 23 24.8	8.852
4	1 13 56.04	1.8654	12 59 54.4	12.298	4	2 46 51.77	2.0207	21 32 13.2	8.760
5	1 15 48.03	1.8677	13 12 10.6	12.242	5	2 48 53.13	2.0246	21 40 56.0	8.667
6	1 17 40.16	1.8700	13 24 23.4	12.185	6	2 50 54.72	2.0285	21 49 33.2	8.573
7	1 19 32.43	1.8723	13 36 32.8	12.127	7	2 52 56.55	2.0326	21 58 4.8	8.480
8	1 21 24.84	1.8747	13 48 38.7	12.069	8	2 54 58.63	2.0367	22 6 30.8	8.386
9	1 23 17.40	1.8772	14 0 41.1	12.010	9	2 57 0.95	2.0407	22 14 51.1	8.290
10	1 25 10.11	1.8797	14 12 39.9	11.950	10	2 59 3.51	2.0447	22 23 5.6	8.194
11	1 27 2.97	1.8822	14 24 35.1	11.890	11	3 1 6.31	2.0487	22 31 14.4	8.098
12	1 28 55.98	1.8848	14 36 26.7	11.829	12	3 3 9.36	2.0528	22 39 17.4	8.001
13	1 30 49.15	1.8875	14 48 14.6	11.767	13	3 5 12.65	2.0568	22 47 14.5	7.902
14	1 32 42.48	1.8902	14 59 58.7	11.705	14	3 7 16.18	2.0609	22 55 5.6	7.803
15	1 34 35.97	1.8929	15 11 39.0	11.640	15	3 9 19.96	2.0650	23 2 50.8	7.703
16	1 36 29.63	1.8957	15 23 15.5	11.576	16	3 11 23.98	2.0691	23 10 30.0	7.603
17	1 38 23.46	1.8986	15 34 48.1	11.510	17	3 13 28.25	2.0732	23 18 3.1	7.502
18	1 40 17.46	1.9014	15 46 16.7	11.444	18	3 15 32.76	2.0772	23 25 30.2	7.400
19	1 42 11.63	1.9043	15 57 41.4	11.378	19	3 17 37.52	2.0813	23 32 51.1	7.297
20	1 44 5.98	1.9073	16 9 2.1	11.311	20	3 19 42.52	2.0854	23 40 5.8	7.193
21	1 46 0.51	1.9103	16 20 18.7	11.243	21	3 21 47.77	2.0895	23 47 14.3	7.089
22	1 47 55.22	1.9134	16 31 31.2	11.174	22	3 23 53.26	2.0936	23 54 16.5	6.984
23	1 49 50.12	1.9165	16 42 39.6	11.105	23	3 25 59.00	2.0977	24 1 12.4	6.878
24	1 51 45.20	1.9196	N. 16 53 43.8	11.035	24	3 28 4.98	2.1017	N. 24 8 1.9	6.772

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 9.					THURSDAY 11.				
0	h m s	s	N. 24 8 1.9	6.772	0	h m s	s	N. 27 17 19.3	0.878
1	3 28 4.98	2.1017	24 14 45.0	6.664	1	5 13 13.99	2.2651	27 18 7.9	0.742
2	3 30 11.20	2.1057	24 21 21.6	6.556	2	5 15 29.97	2.2673	27 18 48.3	0.604
3	3 32 17.67	2.1098	24 27 51.7	6.447	3	5 17 46.07	2.2694	27 19 20.4	0.467
4	3 34 24.38	2.1138	24 34 15.3	6.338	4	5 20 2.30	2.2716	27 19 44.3	0.330
5	3 36 31.33	2.1179	24 40 32.3	6.228	5	5 22 18.66	2.2737	27 20 0.0	0.192
6	3 38 38.53	2.1220	24 46 42.7	6.117	6	5 24 35.14	2.2757	27 20 7.4	+ 0.054
7	3 40 45.97	2.1260	24 52 46.4	6.006	7	5 26 51.74	2.2776	27 20 6.5	- 0.085
8	3 42 53.65	2.1300	24 58 43.4	5.893	8	5 29 8.45	2.2794	27 19 57.2	0.224
9	3 45 1.57	2.1339	25 4 33.6	5.780	9	5 31 25.27	2.2812	27 19 39.6	0.368
10	3 47 9.72	2.1378	25 10 17.0	5.667	10	5 33 42.20	2.2830	27 19 13.6	0.503
11	3 49 18.11	2.1417	25 15 53.6	5.553	11	5 35 59.23	2.2846	27 18 39.2	0.642
12	3 51 26.73	2.1457	25 21 23.4	5.438	12	5 38 16.35	2.2861	27 17 56.5	0.782
13	3 53 35.59	2.1496	25 26 46.2	5.322	13	5 40 33.56	2.2876	27 17 5.4	0.923
14	3 55 44.68	2.1534	25 32 2.0	5.205	14	5 42 50.86	2.2891	27 16 5.8	1.064
15	3 57 54.00	2.1573	25 37 10.8	5.087	15	5 45 8.25	2.2905	27 14 57.7	1.205
16	4 0 3.56	2.1612	25 42 12.5	4.970	16	5 47 25.72	2.2918	27 13 41.2	1.346
17	4 2 13.35	2.1650	25 47 7.2	4.852	17	5 49 43.26	2.2929	27 12 16.2	1.487
18	4 4 23.36	2.1687	25 51 54.8	4.733	18	5 52 0.87	2.2941	27 10 42.7	1.628
19	4 6 33.60	2.1725	25 56 35.2	4.613	19	5 54 18.56	2.2953	27 9 0.8	1.770
20	4 8 44.06	2.1762	26 1 8.3	4.492	20	5 56 36.31	2.2963	27 7 10.3	1.912
21	4 10 54.74	2.1799	26 5 34.2	4.371	21	5 58 54.11	2.2972	27 5 11.3	2.054
22	4 13 5.65	2.1836	26 9 52.8	4.249	22	6 1 11.97	2.2981	27 3 3.8	2.197
23	4 15 16.77	2.1872	N. 26 14 4.1	4.127	23	6 3 29.88	2.2989	N. 27 0 47.7	2.339
24	4 17 28.11	2.1908				6 5 47.84	2.2997		
WEDNESDAY 10.					FRIDAY 12.				
0	4 19 39.66	2.1943	N. 26 18 8.0	4.004	0	6 8 5.84	2.3003	N. 26 58 23.1	2.482
1	4 21 51.42	2.1978	26 22 4.5	3.880	1	6 10 23.88	2.3009	26 55 49.9	2.624
2	4 24 3.39	2.2013	26 25 53.6	3.756	2	6 12 41.95	2.3014	26 53 8.2	2.766
3	4 26 15.57	2.2047	26 29 35.2	3.631	3	6 15 0.05	2.3019	26 50 18.0	2.908
4	4 28 27.95	2.2080	26 33 9.3	3.505	4	6 17 18.18	2.3022	26 47 19.2	3.051
5	4 30 40.53	2.2114	26 36 35.8	3.378	5	6 19 36.32	2.3025	26 44 11.8	3.194
6	4 32 53.32	2.2147	26 39 54.7	3.252	6	6 21 54.48	2.3028	26 40 55.9	3.337
7	4 35 6.30	2.2179	26 43 6.0	3.124	7	6 24 12.66	2.3030	26 37 31.4	3.480
8	4 37 19.47	2.2211	26 46 9.6	2.996	8	6 26 30.84	2.3031	26 33 58.3	3.622
9	4 39 32.83	2.2242	26 49 5.5	2.867	9	6 28 49.03	2.3032	26 30 16.7	3.765
10	4 41 46.38	2.2273	26 51 53.7	2.738	10	6 31 7.22	2.3032	26 26 26.5	3.908
11	4 44 0.11	2.2304	26 54 34.1	2.609	11	6 33 25.41	2.3031	26 22 27.7	4.051
12	4 46 14.03	2.2335	26 57 6.8	2.479	12	6 35 43.59	2.3029	26 18 20.4	4.193
13	4 48 28.13	2.2364	26 59 31.6	2.348	13	6 38 1.76	2.3027	26 14 4.5	4.336
14	4 50 42.40	2.2393	27 1 48.5	2.217	14	6 40 19.91	2.3024	26 9 40.1	4.478
15	4 52 56.84	2.2421	27 3 57.6	2.086	15	6 42 38.05	2.3021	26 5 7.2	4.620
16	4 55 11.45	2.2448	27 5 58.8	1.953	16	6 44 56.16	2.3016	26 0 25.7	4.762
17	4 57 26.22	2.2476	27 7 52.0	1.820	17	6 47 14.24	2.3012	25 55 35.7	4.904
18	4 59 41.16	2.2503	27 9 37.2	1.687	18	6 49 32.30	2.3007	25 50 37.2	5.046
19	5 1 56.26	2.2529	27 11 14.4	1.553	19	6 51 50.32	2.3000	25 45 30.2	5.187
20	5 4 11.51	2.2554	27 12 43.6	1.419	20	6 54 8.30	2.2994	25 40 14.7	5.329
21	5 6 26.91	2.2579	27 14 4.7	1.284	21	6 56 26.25	2.2987	25 34 50.7	5.471
22	5 8 42.46	2.2603	27 15 17.7	1.149	22	6 58 44.15	2.2979	25 29 18.2	5.612
23	5 10 58.15	2.2627	27 16 22.6	1.013	23	7 1 2.00	2.2972	25 23 37.3	5.754
24	5 13 13.99	2.2651	N. 27 17 19.3	0.878	24	7 3 19.81	2.2963	N. 25 17 47.9	5.893

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 13.					MONDAY 15.				
0	7 3 19.81	2.2963	N.25 17 47.9	5.893	0	8 51 47.42	2.2144	N.18 1 18.5	12.098
1	7 5 37.56	2.2953	25 11 50.1	6.033	1	8 54 0.23	2.2125	17 49 11.7	12.168
2	7 7 55.25	2.2943	25 5 43.9	6.173	2	8 56 12.92	2.2105	17 36 58.3	12.276
3	7 10 12.88	2.2933	24 59 29.3	6.313	3	8 58 25.49	2.2086	17 24 38.3	12.327
4	7 12 30.45	2.2922	24 53 6.3	6.452	4	9 0 37.95	2.2067	17 12 11.8	12.495
5	7 14 47.95	2.2911	24 46 35.0	6.592	5	9 2 50.30	2.2048	16 59 38.9	12.601
6	7 17 5.38	2.2899	24 39 55.3	6.731	6	9 5 2.53	2.2029	16 46 59.7	12.707
7	7 19 22.74	2.2887	24 33 7.3	6.869	7	9 7 14.65	2.2011	16 34 14.1	12.812
8	7 21 40.02	2.2873	24 26 11.0	7.007	8	9 9 26.66	2.1993	16 21 22.3	12.915
9	7 23 57.22	2.2860	24 19 6.5	7.144	9	9 11 38.57	2.1976	16 8 24.3	13.017
10	7 26 14.34	2.2847	24 11 53.7	7.281	10	9 13 50.37	2.1958	15 55 20.2	13.119
11	7 28 31.38	2.2833	24 4 32.7	7.418	11	9 16 2.06	2.1939	15 42 10.0	13.220
12	7 30 48.34	2.2819	23 57 3.5	7.555	12	9 18 13.64	2.1922	15 28 53.8	13.319
13	7 33 5.21	2.2803	23 49 26.1	7.691	13	9 20 25.12	2.1906	15 15 31.7	13.417
14	7 35 21.98	2.2787	23 41 40.6	7.827	14	9 22 36.51	2.1890	15 2 3.7	13.515
15	7 37 38.66	2.2772	23 33 46.9	7.962	15	9 24 47.80	2.1873	14 48 29.9	13.612
16	7 39 55.25	2.2756	23 25 45.2	8.096	16	9 26 58.99	2.1857	14 34 50.3	13.707
17	7 42 11.74	2.2740	23 17 35.4	8.230	17	9 29 10.09	2.1842	14 21 5.1	13.800
18	7 44 28.13	2.2723	23 9 17.6	8.363	18	9 31 21.09	2.1826	14 7 14.3	13.892
19	7 46 44.42	2.2707	23 0 51.8	8.496	19	9 33 32.00	2.1812	13 53 18.0	13.984
20	7 49 0.61	2.2689	22 52 18.1	8.629	20	9 35 42.83	2.1797	13 39 16.2	14.075
21	7 51 16.69	2.2671	22 43 36.4	8.761	21	9 37 53.57	2.1783	13 25 9.0	14.164
22	7 53 32.66	2.2653	22 34 46.8	8.892	22	9 40 4.23	2.1770	13 10 56.5	14.252
23	7 55 48.53	2.2636	N.22 25 49.4	9.022	23	9 42 14.81	2.1756	N.12 56 38.8	14.338
SUNDAY 14.					TUESDAY 16.				
0	7 58 4.29	2.2617	N.22 16 44.1	9.152	0	9 44 25.30	2.1743	N.12 42 15.9	14.424
1	8 0 19.94	2.2598	22 7 31.1	9.282	1	9 46 35.72	2.1731	12 27 47.9	14.508
2	8 2 35.47	2.2579	21 58 10.3	9.411	2	9 48 46.07	2.1719	12 13 14.9	14.592
3	8 4 50.89	2.2561	21 48 41.8	9.539	3	9 50 56.35	2.1707	11 58 36.9	14.674
4	8 7 6.20	2.2542	21 39 5.6	9.667	4	9 53 6.56	2.1696	11 43 54.0	14.755
5	8 9 21.39	2.2522	21 29 21.8	9.794	5	9 55 16.70	2.1685	11 29 6.3	14.833
6	8 11 36.47	2.2503	21 19 30.4	9.920	6	9 57 26.78	2.1673	11 14 14.0	14.911
7	8 13 51.43	2.2483	21 9 31.4	10.045	7	9 59 36.80	2.1666	10 59 17.0	14.988
8	8 16 6.27	2.2464	20 59 25.0	10.169	8	10 1 46.77	2.1657	10 44 15.4	15.064
9	8 18 21.00	2.2445	20 49 11.1	10.293	9	10 3 56.68	2.1648	10 29 9.3	15.138
10	8 20 35.61	2.2424	20 38 49.8	10.417	10	10 6 6.54	2.1640	10 13 58.8	15.211
11	8 22 50.09	2.2403	20 28 21.1	10.540	11	10 8 16.36	2.1632	9 58 44.0	15.282
12	8 25 4.45	2.2384	20 17 45.0	10.662	12	10 10 26.13	2.1623	9 43 25.0	15.352
13	8 27 18.70	2.2364	20 7 1.6	10.782	13	10 12 35.86	2.1612	9 28 1.8	15.421
14	8 29 32.82	2.2343	19 56 11.1	10.902	14	10 14 45.55	2.1612	9 12 34.5	15.488
15	8 31 46.82	2.2323	19 45 13.4	11.022	15	10 16 55.21	2.1607	8 57 3.3	15.553
16	8 34 0.70	2.2303	19 34 8.5	11.141	16	10 19 4.84	2.1602	8 41 28.2	15.618
17	8 36 14.46	2.2283	19 22 56.5	11.258	17	10 21 14.44	2.1598	8 25 49.2	15.682
18	8 38 28.10	2.2263	19 11 37.5	11.375	18	10 23 24.02	2.1593	8 10 6.4	15.743
19	8 40 41.62	2.2243	19 0 11.5	11.492	19	10 25 33.58	2.1592	7 54 20.0	15.803
20	8 42 55.02	2.2223	18 48 38.5	11.607	20	10 27 43.12	2.1589	7 38 30.0	15.862
21	8 45 8.30	2.2203	18 36 58.7	11.720	21	10 29 52.65	2.1587	7 22 36.6	15.918
22	8 47 21.46	2.2183	18 25 12.1	11.833	22	10 32 2.17	2.1586	7 6 39.8	15.974
23	8 49 34.50	2.2163	18 13 18.7	11.946	23	10 34 11.68	2.1585	6 50 39.7	16.028
24	8 51 47.42	2.2144	N.18 1 18.5	12.058	24	10 36 21.19	2.1583	N. 6 34 36.4	16.081

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 17.					FRIDAY 19.				
0	10 36 21.19	2.1585	N. 6 34 36.4	16.081	0	12 21 15.85	2.2401	S. 6 46 45.6	16.689
1	10 38 30.70	2.1586	6 18 30.0	16.132	1	12 23 30.36	2.2436	7 3 22.4	16.596
2	10 40 40.22	2.1587	6 2 20.5	16.182	2	12 25 45.08	2.2471	7 19 57.1	16.560
3	10 42 49.75	2.1589	5 46 8.1	16.230	3	12 28 0.01	2.2507	7 36 29.6	16.522
4	10 44 59.29	2.1592	5 29 52.9	16.277	4	12 30 15.16	2.2543	7 52 59.8	16.483
5	10 47 8.85	2.1595	5 13 34.9	16.322	5	12 32 30.53	2.2581	8 9 27.6	16.444
6	10 49 18.43	2.1598	4 57 14.3	16.365	6	12 34 46.13	2.2618	8 25 52.8	16.398
7	10 51 28.03	2.1603	4 40 51.1	16.407	7	12 37 1.95	2.2657	8 42 15.3	16.352
8	10 53 37.67	2.1609	4 24 25.5	16.447	8	12 39 18.01	2.2696	8 58 35.0	16.305
9	10 55 47.34	2.1615	4 7 57.5	16.486	9	12 41 34.30	2.2735	9 14 51.9	16.256
10	10 57 57.05	2.1621	3 51 27.2	16.523	10	12 43 50.83	2.2775	9 31 5.7	16.204
11	11 0 6.80	2.1628	3 34 54.8	16.558	11	12 46 7.60	2.2816	9 47 16.4	16.151
12	11 2 16.59	2.1636	3 18 20.3	16.592	12	12 48 24.62	2.2857	10 3 23.8	16.095
13	11 4 26.43	2.1645	3 1 43.8	16.624	13	12 50 41.89	2.2899	10 19 27.8	16.037
14	11 6 36.33	2.1655	2 45 5.4	16.654	14	12 52 59.41	2.2942	10 35 28.3	15.977
15	11 8 46.29	2.1665	2 28 25.3	16.682	15	12 55 17.19	2.2985	10 51 25.1	15.916
16	11 10 56.31	2.1676	2 11 43.5	16.710	16	12 57 35.23	2.3028	11 7 18.2	15.852
17	11 13 6.40	2.1687	1 55 0.1	16.736	17	12 59 53.53	2.3072	11 23 7.4	15.787
18	11 15 16.55	2.1698	1 38 15.2	16.759	18	13 2 12.10	2.3117	11 38 52.7	15.720
19	11 17 26.78	2.1712	1 21 29.0	16.781	19	13 4 30.94	2.3162	11 54 33.8	15.650
20	11 19 37.09	2.1726	1 4 41.5	16.802	20	13 6 50.05	2.3207	12 10 10.7	15.578
21	11 21 47.49	2.1741	0 47 52.8	16.820	21	13 9 9.43	2.3253	12 25 43.2	15.505
22	11 23 57.98	2.1756	0 31 3.1	16.837	22	13 11 29.09	2.3301	12 41 11.3	15.429
23	11 26 8.56	2.1771	N. 0 14 12.4	16.852	23	13 13 49.04	2.3348	S. 12 56 34.7	15.351
THURSDAY 18.					SATURDAY 20.				
0	11 28 19.23	2.1787	S. 0 2 39.2	16.866	0	13 16 9.27	2.3396	S. 13 11 53.4	15.272
1	11 30 30.00	2.1804	0 19 31.5	16.877	1	13 18 29.79	2.3444	13 27 7.3	15.190
2	11 32 40.88	2.1822	0 36 24.4	16.886	2	13 20 50.60	2.3492	13 42 16.2	15.106
3	11 34 51.87	2.1841	0 53 17.8	16.893	3	13 23 11.69	2.3540	13 57 20.0	15.021
4	11 37 2.97	2.1861	1 10 11.6	16.900	4	13 25 33.08	2.3589	14 12 18.7	14.933
5	11 39 14.20	2.1882	1 27 5.8	16.905	5	13 27 54.76	2.3638	14 27 12.0	14.843
6	11 41 25.55	2.1903	1 44 0.2	16.907	6	13 30 16.74	2.3688	14 41 59.9	14.752
7	11 43 37.03	2.1924	2 0 54.7	16.907	7	13 32 39.02	2.3738	14 56 42.2	14.658
8	11 45 48.64	2.1946	2 17 49.1	16.906	8	13 35 1.60	2.3788	15 11 18.9	14.563
9	11 48 0.38	2.1968	2 34 43.4	16.903	9	13 37 24.48	2.3839	15 25 49.8	14.465
10	11 50 12.26	2.1992	2 51 37.5	16.898	10	13 39 47.67	2.3891	15 40 14.7	14.365
11	11 52 24.29	2.2017	3 8 31.2	16.891	11	13 42 11.17	2.3942	15 54 33.6	14.264
12	11 54 36.47	2.2042	3 25 24.4	16.882	12	13 44 34.97	2.3993	16 8 46.4	14.161
13	11 56 48.80	2.2068	3 42 17.0	16.872	13	13 46 59.08	2.4044	16 22 52.9	14.055
14	11 59 1.29	2.2096	3 59 9.0	16.860	14	13 49 23.50	2.4096	16 36 53.0	13.947
15	12 1 13.95	2.2123	4 16 0.2	16.846	15	13 51 48.23	2.4148	16 50 46.6	13.838
16	12 3 26.77	2.2151	4 32 50.5	16.829	16	13 54 13.27	2.4200	17 4 33.6	13.727
17	12 5 39.76	2.2180	4 49 39.7	16.811	17	13 56 38.63	2.4252	17 18 13.9	13.615
18	12 7 52.93	2.2210	5 6 27.8	16.791	18	13 59 4.30	2.4304	17 31 47.4	13.500
19	12 10 6.28	2.2240	5 23 14.6	16.768	19	14 1 30.28	2.4356	17 45 13.9	13.383
20	12 12 19.81	2.2271	5 40 0.0	16.745	20	14 3 56.57	2.4408	17 58 33.3	13.264
21	12 14 33.53	2.2303	5 56 44.0	16.719	21	14 6 23.18	2.4461	18 11 45.6	13.144
22	12 16 47.44	2.2335	6 13 26.3	16.691	22	14 8 50.10	2.4513	18 24 50.6	13.022
23	12 19 1.55	2.2367	6 30 6.9	16.661	23	14 11 17.33	2.4565	18 37 48.2	12.898
24	12 21 15.85	2.2401	S. 6 46 45.6	16.629	24	14 13 44.88	2.4617	S. 18 50 38.3	12.772

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 21.					TUESDAY 23.				
0	14 13 44.88	2.4617	S. 18 50 38.3	12.772	0	16 17 3.38	2.6430	S. 26 8 39.6	5.000
1	14 16 12.74	2.4669	19 3 20.8	12.643	1	16 19 42.12	2.6462	26 13 34.0	4.814
2	14 18 40.91	2.4721	19 15 55.5	12.513	2	16 22 20.93	2.6474	26 18 17.3	4.628
3	14 21 9.39	2.4772	19 28 22.4	12.382	3	16 24 59.81	2.6484	26 22 49.4	4.441
4	14 23 38.18	2.4823	19 40 41.4	12.249	4	16 27 38.74	2.6492	26 27 10.2	4.253
5	14 26 7.27	2.4874	19 52 52.3	12.114	5	16 30 17.72	2.6499	26 31 19.8	4.066
6	14 28 36.67	2.4926	20 4 55.1	11.977	6	16 32 56.73	2.6504	26 35 18.1	3.878
7	14 31 6.38	2.4977	20 16 49.6	11.839	7	16 35 35.77	2.6508	26 39 5.1	3.690
8	14 33 36.39	2.5027	20 28 35.8	11.699	8	16 38 14.83	2.6511	26 42 40.9	3.502
9	14 36 6.70	2.5077	20 40 13.5	11.557	9	16 40 53.90	2.6512	26 46 5.4	3.314
10	14 38 37.31	2.5127	20 51 42.7	11.414	10	16 43 32.97	2.6512	26 49 18.6	3.126
11	14 41 8.22	2.5177	21 3 3.2	11.269	11	16 46 12.04	2.6510	26 52 20.5	2.937
12	14 43 39.43	2.5226	21 14 15.0	11.122	12	16 48 51.09	2.6506	26 55 11.0	2.748
13	14 46 10.93	2.5274	21 25 17.9	10.974	13	16 51 30.11	2.6501	26 57 50.2	2.560
14	14 48 42.71	2.5321	21 36 11.9	10.825	14	16 54 9.10	2.6494	27 0 18.2	2.372
15	14 51 14.78	2.5369	21 46 56.9	10.674	15	16 56 48.04	2.6486	27 2 34.9	2.183
16	14 53 47.14	2.5416	21 57 32.8	10.521	16	16 59 26.93	2.6476	27 4 40.2	1.995
17	14 56 19.77	2.5462	22 7 59.4	10.366	17	17 2 5.75	2.6464	27 6 34.3	1.807
18	14 58 52.68	2.5507	22 18 16.7	10.210	18	17 4 44.50	2.6452	27 8 17.1	1.620
19	15 1 25.86	2.5552	22 28 24.6	10.053	19	17 7 23.17	2.6437	27 9 48.7	1.432
20	15 3 59.31	2.5597	22 38 23.1	9.895	20	17 10 1.75	2.6422	27 11 9.0	1.245
21	15 6 33.03	2.5642	22 48 12.0	9.735	21	17 12 40.23	2.6404	27 12 18.1	1.058
22	15 9 7.01	2.5684	22 57 51.3	9.573	22	17 15 18.60	2.6385	27 13 16.0	0.872
23	15 11 41.24	2.5726	S. 23 7 20.8	9.410	23	17 17 56.85	2.6365	S. 27 14 2.7	0.686
MONDAY 22.					WEDNESDAY 24.				
0	15 14 15.72	2.5767	S. 23 16 40.5	9.246	0	17 20 34.98	2.6343	S. 27 14 38.3	0.500
1	15 16 50.44	2.5808	23 25 50.3	9.081	1	17 23 12.97	2.6319	27 15 2.7	0.313
2	15 19 25.41	2.5848	23 34 50.2	8.915	2	17 25 50.81	2.6294	27 15 16.1	- 0.131
3	15 22 0.62	2.5887	23 43 40.1	8.747	3	17 28 28.50	2.6268	27 15 18.4	+ 0.054
4	15 24 36.06	2.5925	23 52 19.9	8.578	4	17 31 6.03	2.6241	27 15 9.6	0.237
5	15 27 11.72	2.5962	24 0 49.5	8.407	5	17 33 43.39	2.6211	27 14 49.9	0.420
6	15 29 47.60	2.5997	24 9 8.8	8.236	6	17 36 20.56	2.6179	27 14 19.2	0.603
7	15 32 23.69	2.6032	24 17 17.8	8.064	7	17 38 57.54	2.6147	27 13 37.5	0.785
8	15 34 59.99	2.6067	24 25 16.5	7.891	8	17 41 34.33	2.6115	27 12 45.0	0.965
9	15 37 36.49	2.6100	24 33 4.7	7.716	9	17 44 10.92	2.6081	27 11 41.7	1.143
10	15 40 13.19	2.6132	24 40 42.4	7.541	10	17 46 47.30	2.6044	27 10 27.6	1.323
11	15 42 50.07	2.6162	24 48 9.6	7.365	11	17 49 23.45	2.6006	27 9 2.7	1.503
12	15 45 27.13	2.6191	24 55 26.2	7.187	12	17 51 59.37	2.5967	27 7 27.2	1.681
13	15 48 4.36	2.6220	25 2 32.1	7.009	13	17 54 35.05	2.5927	27 5 41.0	1.858
14	15 50 41.77	2.6248	25 9 27.3	6.830	14	17 57 10.49	2.5886	27 3 44.2	2.034
15	15 53 19.34	2.6274	25 16 11.7	6.650	15	17 59 45.68	2.5843	27 1 36.9	2.209
16	15 55 57.06	2.6298	25 22 45.3	6.469	16	18 2 20.61	2.5799	26 59 19.1	2.384
17	15 58 34.92	2.6322	25 29 8.0	6.287	17	18 4 55.27	2.5753	26 56 50.8	2.557
18	16 1 12.92	2.6344	25 35 19.8	6.105	18	18 7 29.65	2.5707	26 54 12.2	2.729
19	16 3 51.05	2.6365	25 41 20.6	5.922	19	18 10 3.75	2.5659	26 51 23.3	2.900
20	16 6 29.30	2.6385	25 47 10.5	5.740	20	18 12 37.56	2.5611	26 48 24.2	3.071
21	16 9 7.67	2.6404	25 52 49.4	5.557	21	18 15 11.08	2.5562	26 45 14.8	3.241
22	16 11 46.15	2.6421	25 58 17.3	5.372	22	18 17 44.30	2.5510	26 41 55.3	3.408
23	16 14 24.72	2.6436	26 3 34.0	5.186	23	18 20 17.20	2.5458	26 38 25.8	3.573
24	16 17 3.38	2.6450	S. 26 8 39.6	5.000	24	18 22 49.79	2.5405	S. 26 34 46.3	3.741

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 25.					SATURDAY 27.				
0	18 22 49.79	2.5405	S. 26 34 46.3	3.741	0	20 17 24.40	2.2213	S. 20 49 12.5	10.114
1	18 25 22.06	2.5351	26 30 56.9	3.906	1	20 19 37.47	2.2145	20 39 2.7	10.212
2	18 27 54.00	2.5296	26 26 57.6	4.069	2	20 21 50.14	2.2077	20 28 47.1	10.308
3	18 30 25.61	2.5240	26 22 48.6	4.231	3	20 24 2.40	2.2009	20 18 25.8	10.403
4	18 32 56.88	2.5183	26 18 29.9	4.392	4	20 26 14.25	2.1941	20 7 58.8	10.496
5	18 35 27.80	2.5125	26 14 1.6	4.552	5	20 28 25.69	2.1873	19 57 26.3	10.588
6	18 37 58.38	2.5067	26 9 23.7	4.711	6	20 30 36.72	2.1805	19 46 48.3	10.678
7	18 40 28.61	2.5007	26 4 36.3	4.868	7	20 32 47.35	2.1738	19 36 4.9	10.767
8	18 42 58.47	2.4947	25 59 39.5	5.024	8	20 34 57.58	2.1672	19 25 16.2	10.855
9	18 45 27.97	2.4886	25 54 33.4	5.179	9	20 37 7.42	2.1606	19 14 22.3	10.942
10	18 47 57.10	2.4824	25 49 18.0	5.332	10	20 39 16.86	2.1540	19 3 23.2	11.027
11	18 50 25.86	2.4762	25 43 53.5	5.484	11	20 41 25.90	2.1474	18 52 19.0	11.111
12	18 52 54.25	2.4700	25 38 19.9	5.635	12	20 43 34.55	2.1409	18 41 9.9	11.193
13	18 55 22.26	2.4636	25 32 37.3	5.784	13	20 45 42.81	2.1345	18 29 55.9	11.273
14	18 57 49.88	2.4571	25 26 45.8	5.933	14	20 47 50.69	2.1281	18 18 37.1	11.353
15	19 0 17.11	2.4505	25 20 45.4	6.080	15	20 49 58.18	2.1218	18 7 13.5	11.432
16	19 2 43.95	2.4440	25 14 36.2	6.225	16	20 52 5.30	2.1155	17 55 45.2	11.509
17	19 5 10.39	2.4374	25 8 18.4	6.368	17	20 54 12.04	2.1092	17 44 12.4	11.584
18	19 7 36.44	2.4308	25 1 52.0	6.511	18	20 56 18.40	2.1029	17 32 35.1	11.658
19	19 10 2.09	2.4241	24 55 17.1	6.652	19	20 58 24.39	2.0968	17 20 53.4	11.732
20	19 12 27.33	2.4173	24 48 33.7	6.792	20	21 0 30.02	2.0907	17 9 7.3	11.803
21	19 14 52.17	2.4106	24 41 42.0	6.930	21	21 2 35.28	2.0847	16 57 17.0	11.873
22	19 17 16.60	2.4037	24 34 42.1	7.067	22	21 4 40.18	2.0787	16 45 22.5	11.943
23	19 19 40.62	2.3968	S. 24 27 34.0	7.202	23	21 6 44.72	2.0727	S. 16 33 23.8	12.012
FRIDAY 26.					SUNDAY 28.				
0	19 22 4.22	2.3899	S. 24 20 17.8	7.337	0	21 8 48.91	2.0669	S. 16 21 21.1	12.076
1	19 24 27.41	2.3830	24 12 53.6	7.469	1	21 10 52.75	2.0611	16 9 14.4	12.143
2	19 26 50.18	2.3761	24 5 21.5	7.600	2	21 12 56.24	2.0553	15 57 3.9	12.207
3	19 29 12.54	2.3692	23 57 41.6	7.729	3	21 14 59.38	2.0495	15 44 49.6	12.270
4	19 31 34.48	2.3622	23 49 54.0	7.857	4	21 17 2.18	2.0439	15 32 31.5	12.332
5	19 33 56.00	2.3551	23 41 58.7	7.984	5	21 19 4.65	2.0383	15 20 9.8	12.392
6	19 36 17.09	2.3480	23 33 55.9	8.109	6	21 21 6.78	2.0327	15 7 44.5	12.451
7	19 38 37.76	2.3410	23 25 45.6	8.233	7	21 23 8.58	2.0273	14 55 15.7	12.509
8	19 40 58.01	2.3340	23 17 27.9	8.356	8	21 25 10.06	2.0219	14 42 43.4	12.566
9	19 43 17.84	2.3269	23 9 2.9	8.477	9	21 27 11.21	2.0166	14 30 7.8	12.621
10	19 45 37.24	2.3198	23 0 30.7	8.596	10	21 29 12.05	2.0113	14 17 28.9	12.676
11	19 47 56.22	2.3127	22 51 51.4	8.714	11	21 31 12.57	2.0061	14 4 46.7	12.730
12	19 50 14.77	2.3057	22 43 5.0	8.831	12	21 33 12.78	2.0010	13 52 1.3	12.782
13	19 52 32.90	2.2986	22 34 11.7	8.945	13	21 35 12.69	1.9959	13 39 12.9	12.832
14	19 54 50.60	2.2915	22 25 11.6	9.058	14	21 37 12.29	1.9908	13 26 21.5	12.882
15	19 57 7.88	2.2844	22 16 4.7	9.170	15	21 39 11.59	1.9858	13 13 27.1	12.931
16	19 59 24.73	2.2773	22 6 51.2	9.281	16	21 41 10.59	1.9809	13 0 29.8	12.978
17	20 1 41.16	2.2703	21 57 31.0	9.391	17	21 43 9.30	1.9762	12 47 29.7	13.024
18	20 3 57.17	2.2633	21 48 4.3	9.498	18	21 45 7.73	1.9714	12 34 26.9	13.069
19	20 6 12.76	2.2563	21 38 31.2	9.604	19	21 47 5.87	1.9667	12 21 21.4	13.113
20	20 8 27.93	2.2492	21 28 51.8	9.709	20	21 49 3.73	1.9621	12 8 13.3	13.157
21	20 10 42.67	2.2422	21 19 6.1	9.812	21	21 51 1.32	1.9576	11 55 2.6	13.199
22	20 12 57.00	2.2353	21 9 14.3	9.914	22	21 52 58.64	1.9531	11 41 49.4	13.239
23	20 15 10.91	2.2283	20 59 16.4	10.015	23	21 54 55.69	1.9487	11 28 33.9	13.278
24	20 17 24.40	2.2213	S. 20 49 12.5	10.114	24	21 56 52.48	1.9443	S. 11 15 16.0	13.317

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 29.					WEDNESDAY 31.				
0	21 56 52.48	1.9443	S. 11 15 16.0	13.317	0	23 26 31.51	1.8178	S. 0 10 36.3	14.027
1	21 58 49.01	1.9401	11 1 55.8	13.355	1	23 28 20.55	1.8169	N. 0 3 24.5	14.020
2	22 0 45.29	1.9359	10 48 33.4	13.391	2	23 30 9.54	1.8160	0 17 24.9	14.008
3	22 2 41.31	1.9317	10 35 8.9	13.427	3	23 31 58.47	1.8151	0 31 24.7	13.992
4	22 4 37.09	1.9277	10 21 42.2	13.462	4	23 33 47.35	1.8143	0 45 23.9	13.982
5	22 6 32.63	1.9237	10 8 13.5	13.494	5	23 35 36.19	1.8137	0 59 22.6	13.972
6	22 8 27.93	1.9197	9 54 42.9	13.526	6	23 37 25.00	1.8132	1 13 20.6	13.960
7	22 10 22.99	1.9158	9 41 10.4	13.557	7	23 39 13.77	1.8126	1 27 17.8	13.948
8	22 12 17.83	1.9121	9 27 36.0	13.588	8	23 41 2.51	1.8120	1 41 14.3	13.935
9	22 14 12.44	1.9084	9 13 59.8	13.618	9	23 42 51.21	1.8115	1 55 10.0	13.921
10	22 16 6.83	1.9048	9 0 21.9	13.646	10	23 44 39.89	1.8112	2 9 4.8	13.905
11	22 18 1.01	1.9012	8 46 42.3	13.672	11	23 46 28.55	1.8109	2 22 58.6	13.889
12	22 19 54.97	1.8976	8 33 1.2	13.698	12	23 48 17.20	1.8107	2 36 51.5	13.873
13	22 21 48.72	1.8942	8 19 18.5	13.724	13	23 50 5.83	1.8104	2 50 43.4	13.856
14	22 23 42.27	1.8908	8 5 34.3	13.748	14	23 51 54.45	1.8103	3 4 34.2	13.837
15	22 25 35.62	1.8875	7 51 48.7	13.771	15	23 53 43.07	1.8103	3 18 23.9	13.818
16	22 27 28.77	1.8843	7 38 1.8	13.793	16	23 55 31.69	1.8103	3 32 12.4	13.798
17	22 29 21.74	1.8812	7 24 13.5	13.815	17	23 57 20.31	1.8104	3 45 59.7	13.778
18	22 31 14.52	1.8781	7 10 24.0	13.835	18	23 59 8.94	1.8106	3 59 45.8	13.757
19	22 33 7.11	1.8751	6 56 33.3	13.854	19	0 0 57.58	1.8108	4 13 30.6	13.735
20	22 34 59.53	1.8722	6 42 41.5	13.872	20	0 2 46.23	1.8110	4 27 14.0	13.712
21	22 36 51.77	1.8693	6 28 48.6	13.890	21	0 4 34.90	1.8113	4 40 56.0	13.688
22	22 38 43.84	1.8664	6 14 54.7	13.907	22	0 6 23.59	1.8117	4 54 36.6	13.663
23	22 40 35.74	1.8637	S. 6 0 59.8	13.922	23	0 8 12.30	1.8122	N. 5 8 15.6	13.638
TUESDAY 30.					THURSDAY, APRIL 1.				
0	22 42 27.48	1.8610	S. 5 47 4.1	13.936	0	0 10 1.04	1.8126	N. 5 21 53.1	13.612
1	22 44 19.06	1.8584	5 33 7.5	13.950					
2	22 46 10.49	1.8559	5 19 10.1	13.963					
3	22 48 1.77	1.8534	5 5 11.9	13.975					
4	22 49 52.90	1.8511	4 51 13.0	13.986					
5	22 51 43.90	1.8488	4 37 13.6	13.995					
6	22 53 34.76	1.8466	4 23 13.6	14.004					
7	22 55 25.49	1.8444	4 9 13.1	14.012					
8	22 57 16.09	1.8422	3 55 12.1	14.020					
9	22 59 6.56	1.8402	3 41 10.7	14.027					
10	23 0 56.91	1.8382	3 27 8.9	14.032					
11	23 2 47.15	1.8363	3 13 6.8	14.037					
12	23 4 37.27	1.8345	2 59 4.5	14.040					
13	23 6 27.29	1.8327	2 45 2.0	14.043					
14	23 8 17.20	1.8310	2 30 59.3	14.045					
15	23 10 7.01	1.8294	2 16 56.6	14.046					
16	23 11 56.73	1.8279	2 2 53.8	14.047					
17	23 13 46.36	1.8263	1 48 51.0	14.046					
18	23 15 35.89	1.8249	1 34 48.3	14.044					
19	23 17 25.34	1.8236	1 20 45.7	14.042					
20	23 19 14.72	1.8223	1 6 43.3	14.039					
21	23 21 4.02	1.8211	0 52 41.1	14.035					
22	23 22 53.25	1.8199	0 38 39.1	14.030					
23	23 24 42.41	1.8188	0 24 37.5	14.024					
24	23 26 31.51	1.8178	S. 0 10 36.3	14.017					

PHASES OF THE MOON.

	d	h	m
● New Moon Mar.	2	23	56.2
☾ First Quarter	11	3	28.2
○ Full Moon	18	9	27.7
☾ Last Quarter	24	23	59.7

	d	h
☾ Apogee Mar.	8	0.5
☾ Perigee	20	0.3

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
5	SUN W.	23 2 13	3359	24 25 16	3366	25 48 11	3372	27 10 59	3379
	Aldebaran E.	61 9 5	3055	59 40 0	3065	58 11 8	3076	56 42 29	3087
	MARS E.	74 50 16	3110	73 22 19	3118	71 54 31	3126	70 26 53	3133
	Pollux E.	103 17 10	2977	101 46 29	2985	100 15 57	2992	98 45 34	2999
6	SUN W.	34 3 14	3409	35 25 20	3415	36 47 20	3421	38 9 13	3426
	Aldebaran E.	49 22 37	3143	47 55 20	3156	46 28 18	3168	45 1 30	3181
	MARS E.	63 10 59	3170	61 44 14	3176	60 17 36	3183	58 51 6	3188
	Pollux E.	91 15 49	3032	89 46 16	3039	88 16 51	3044	86 47 33	3050
7	SUN W.	44 57 13	3449	46 18 34	3453	47 39 51	3456	49 1 4	3460
	MARS E.	51 40 16	3214	50 14 24	3218	48 48 36	3222	47 22 53	3226
	Pollux E.	79 22 41	3074	77 54 0	3078	76 25 23	3082	74 56 51	3084
	Regulus E.	116 18 51	3061	114 49 54	3065	113 21 2	3069	111 52 14	3071
8	SUN W.	55 46 24	3469	57 7 23	3471	58 28 20	3471	59 49 17	3470
	MARS E.	40 15 14	3238	38 49 50	3239	37 24 27	3241	35 59 6	3241
	Pollux E.	67 35 1	3096	66 6 47	3097	64 38 34	3098	63 10 22	3098
	Regulus E.	104 28 59	3082	103 0 27	3082	101 31 55	3082	100 3 24	3082
9	SUN W.	66 34 17	3463	67 55 23	3460	69 16 32	3456	70 37 45	3452
	VENUS W.	21 51 3	3379	23 13 44	3373	24 36 31	3369	25 59 23	3363
	Pollux E.	55 49 20	3095	54 21 4	3093	52 52 46	3091	51 24 26	3088
	Regulus E.	92 40 38	3076	91 11 59	3073	89 43 16	3070	88 14 30	3066
	JUPITER E.	97 38 43	3035	96 9 14	3033	94 39 42	3030	93 10 6	3026
10	SUN W.	77 25 9	3425	78 46 57	3418	80 8 53	3410	81 30 58	3408
	VENUS W.	32 55 25	3332	34 19 0	3323	35 42 45	3315	37 6 39	3306
	α Arietis W.	31 30 28	3094	32 58 45	3084	34 27 14	3073	35 55 56	3063
	Pollux E.	44 1 47	3070	42 33 1	3065	41 4 9	3061	39 35 12	3056
	Regulus E.	80 49 21	3042	79 20 0	3035	77 50 31	3029	76 20 54	3021
	JUPITER E.	85 40 51	3001	84 10 40	2996	82 40 22	2989	81 9 55	2982
11	SUN W.	88 23 50	3355	89 46 58	3344	91 10 19	3332	92 33 53	3321
	VENUS W.	44 8 57	3254	45 34 2	3242	46 59 21	3231	48 24 54	3218
	α Arietis W.	43 22 46	3007	44 52 50	2996	46 23 8	2984	47 53 41	2971
	Regulus E.	68 50 18	2977	67 19 37	2968	65 48 44	2957	64 17 37	2946
	JUPITER E.	73 35 17	2939	72 3 48	2930	70 32 7	2919	69 0 12	2909
12	SUN W.	99 35 20	3254	101 0 25	3239	102 25 48	3225	103 51 28	3209
	VENUS W.	55 36 35	3148	57 3 47	3133	58 31 17	3117	59 59 6	3101
	α Arietis W.	55 30 30	2905	57 2 43	2890	58 35 15	2876	60 8 5	2860
	Regulus E.	56 38 25	2885	55 5 47	2871	53 32 51	2858	51 59 38	2844
	JUPITER E.	61 17 3	2848	59 43 38	2835	58 9 56	2822	56 35 57	2808
	Spica E.	110 41 16	2888	109 8 42	2874	107 35 50	2860	106 2 40	2846
13	SUN W.	111 4 33	3127	112 32 10	3110	114 0 8	3091	115 28 28	3073
	α Arietis W.	67 57 13	2782	69 34 5	2766	71 7 18	2748	72 42 54	2731
	VENUS W.	67 23 13	3015	68 53 7	2997	70 23 23	2979	71 54 2	2960
	Aldebaran W.	36 48 7	2956	38 19 15	2927	39 51 0	2898	41 23 21	2872
	MARS W.	18 5 27	2930	19 37 8	2911	21 9 13	2892	22 41 42	2874
	Regulus E.	44 8 49	2768	42 33 39	2752	40 58 8	2735	39 22 15	2719

GREENWICH MEAN TIME

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
5	SUN W.	28 33 40	3385	29 56 14	3391	31 18 41	3397	32 41 1	3403
	Aldebaran E.	55 14 4	3098	53 45 52	3109	52 17 53	3120	50 50 8	3132
	MARS E.	68 59 24	3142	67 32 5	3148	66 4 54	3156	64 37 52	3163
	Pollux E.	97 15 20	3006	95 45 15	3013	94 15 18	3020	92 45 30	3026
6	SUN W.	39 31 0	3431	40 52 41	3436	42 14 17	3441	43 35 47	3445
	Aldebaran E.	43 34 58	3194	42 8 42	3208	40 42 42	3223	39 17 0	3239
	MARS E.	57 24 43	3194	55 58 27	3199	54 32 17	3205	53 6 14	3209
	Pollux E.	85 18 22	3056	83 49 18	3060	82 20 20	3065	80 51 28	3069
7	SUN W.	50 22 13	3463	51 43 19	3464	53 4 23	3467	54 25 24	3468
	MARS E.	45 57 15	3229	44 31 40	3232	43 6 9	3234	41 40 40	3236
	Pollux E.	73 28 22	3087	71 59 57	3091	70 31 36	3092	69 3 17	3095
	Regulus E.	110 23 29	3074	108 54 48	3076	107 26 9	3078	105 57 33	3080
8	SUN W.	61 10 15	3470	62 31 13	3468	63 52 13	3467	65 13 14	3465
	MARS E.	34 33 45	3241	33 8 24	3241	31 43 3	3240	30 17 41	3238
	Pollux E.	61 42 10	3099	60 13 59	3098	58 45 47	3097	57 17 34	3096
	Regulus E.	98 34 53	3082	97 6 22	3081	95 37 49	3080	94 9 15	3078
9	SUN W.	71 59 3	3447	73 20 26	3443	74 41 54	3438	76 3 28	3431
	VENUS W.	27 22 22	3358	28 45 27	3351	30 8 39	3345	31 31 58	3338
	Pollux E.	49 56 2	3086	48 27 35	3082	46 59 3	3078	45 30 27	3075
	Regulus E.	86 45 39	3062	85 16 43	3058	83 47 42	3053	82 18 35	3047
	JUPITER E.	91 40 26	3022	90 10 41	3018	88 40 51	3013	87 10 54	3008
10	SUN W.	82 53 12	3394	84 15 35	3385	85 38 9	3375	87 0 54	3365
	VENUS W.	38 30 44	3297	39 54 59	3287	41 19 26	3276	42 44 5	3265
	α Arietis W.	37 24 51	3052	38 53 59	3041	40 23 21	3030	41 52 56	3018
	Pollux E.	38 6 8	3051	36 36 58	3045	35 7 41	3039	33 38 17	3034
	Regulus E.	74 51 7	3014	73 21 11	3005	71 51 4	2997	70 20 47	2987
	JUPITER E.	79 39 20	2974	78 8 35	2966	76 37 40	2958	75 6 34	2949
11	SUN W.	93 57 40	3308	95 21 42	3295	96 45 59	3282	98 10 31	3268
	VENUS W.	49 50 42	3205	51 16 45	3191	52 43 5	3178	54 9 41	3163
	α Arietis W.	49 24 30	2958	50 55 35	2946	52 26 56	2932	53 58 34	2918
	Regulus E.	62 46 17	2935	61 14 42	2923	59 42 52	2911	58 10 47	2898
	JUPITER E.	67 28 4	2897	65 55 41	2886	64 23 4	2873	62 50 11	2862
12	SUN W.	105 17 27	3193	106 43 44	3177	108 10 21	3161	109 37 17	3144
	VENUS W.	61 27 14	3085	62 55 42	3068	64 24 31	3051	65 53 41	3033
	α Arietis W.	61 41 15	2845	63 14 44	2830	64 48 33	2814	66 22 43	2798
	Regulus E.	50 26 7	2829	48 52 17	2815	47 18 8	2799	45 43 39	2783
	JUPITER E.	55 1 40	2794	53 27 4	2780	51 52 10	2765	50 16 56	2750
	Spica E.	104 29 12	2831	102 55 25	2816	101 21 18	2801	99 46 51	2785
13	SUN W.	116 57 10	3056	118 26 14	3037	119 55 41	3019	121 25 30	3000
	α Arietis W.	74 18 53	2713	75 55 15	2696	77 32 0	2678	79 9 9	2661
	VENUS W.	73 25 5	2942	74 56 31	2922	76 28 22	2905	78 0 37	2889
	Aldebaran W.	42 56 16	2845	44 29 45	2819	46 3 48	2795	47 38 23	2771
	MARS W.	24 14 34	2855	25 47 50	2836	27 21 31	2818	28 55 36	2799
	Regulus E.	37 46 0	2702	36 9 23	2685	34 32 23	2669	32 55 1	2652

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
13	JUPITER E.	48 41 23	2735	47 5 29	2719	45 29 14	2704	43 52 39	2687
	Spica E.	98 12 3	2769	96 36 54	2753	95 1 24	2736	93 25 32	2719
14	SUN W.	122 55 43	2981	124 26 19	2962	125 57 19	2943	127 28 43	2924
	α Arietis W.	80 46 41	2643	82 24 38	2625	84 2 59	2607	85 41 45	2589
	VENUS W.	79 33 17	2864	81 6 22	2844	82 39 53	2825	84 13 49	2805
	Aldebaran W.	49 13 29	2747	50 49 7	2723	52 25 16	2700	54 1 56	2678
	MARS W.	30 30 5	2780	32 4 59	2761	33 40 18	2743	35 16 1	2723
	Spica E.	85 20 30	2632	83 42 19	2614	82 3 43	2596	80 24 43	2578
15	α Arietis W.	94 1 49	2497	95 43 6	2480	97 24 48	2462	99 6 55	2444
	VENUS W.	92 10 3	2704	93 46 37	2684	95 23 38	2664	97 1 6	2645
	Aldebaran W.	62 12 42	2569	63 52 19	2549	65 32 24	2528	67 12 58	2509
	MARS W.	43 20 59	2629	44 59 15	2610	46 37 57	2591	48 17 4	2572
	Spica E.	72 3 28	2487	70 21 57	2470	68 40 1	2452	66 57 40	2433
	SATURN E.	110 19 22	2317	108 38 33	2498	106 57 17	2480	105 15 35	2461
	Antares E.	117 53 9	2482	116 11 31	2464	114 29 27	2445	112 46 57	2428
16	Aldebaran W.	75 42 36	2414	77 25 51	2396	79 9 31	2379	80 53 36	2362
	MARS W.	56 39 0	2482	58 20 38	2465	60 2 40	2448	61 45 6	2432
	Pollux W.	33 4 38	2387	34 48 32	2366	36 32 55	2346	38 17 47	2328
	Spica E.	58 19 37	2348	56 34 47	2331	54 49 33	2315	53 3 56	2298
	SATURN E.	96 40 36	2371	94 56 20	2355	93 11 40	2337	91 26 35	2322
	Antares E.	104 8 10	2341	102 23 10	2324	100 37 45	2307	98 51 56	2291
17	Aldebaran W.	89 39 55	2285	91 26 17	2272	93 12 58	2259	94 59 58	2246
	MARS W.	70 22 59	2355	72 7 39	2341	73 52 39	2327	75 37 59	2313
	Pollux W.	47 8 43	2242	48 56 8	2227	50 43 55	2212	52 32 4	2199
	Spica E.	44 10 12	2227	42 22 24	2214	40 34 17	2201	38 45 51	2190
	SATURN E.	82 35 30	2247	80 48 12	2234	79 0 35	2220	77 12 38	2208
	Antares E.	89 57 8	2216	88 9 5	2202	86 20 41	2189	84 31 57	2176
18	Aldebaran W.	103 59 16	2195	105 47 51	2186	107 36 39	2180	109 25 37	2173
	MARS W.	84 29 11	2257	86 16 14	2247	88 3 31	2239	89 51 1	2231
	Pollux W.	61 37 39	2139	63 27 38	2129	65 17 53	2120	67 8 22	2112
	Regulus W.	24 35 47	2131	26 25 59	2120	28 16 27	2111	30 7 9	2102
	SATURN E.	68 8 37	2157	66 19 4	2148	64 29 18	2141	62 39 21	2134
	Antares E.	75 23 46	2121	73 33 19	2112	71 42 38	2103	69 51 43	2095
19	MARS W.	98 51 14	2200	100 39 42	2195	102 28 17	2192	104 16 57	2190
	Pollux W.	76 23 38	2079	78 15 9	2075	80 6 46	2072	81 58 29	2069
	Regulus W.	39 23 43	2068	41 15 31	2064	43 7 25	2061	44 59 25	2058
	JUPITER E.	35 37 49	2050	37 30 6	2044	39 22 31	2040	41 15 3	2036
	SATURN E.	53 27 29	2113	51 36 50	2113	49 46 10	2112	47 55 29	2113
	Antares E.	60 34 23	2064	58 42 29	2061	56 50 29	2057	54 58 23	2054
	α Aquilæ E.	111 48 36	2221	110 14 36	2200	108 40 8	2180	107 5 14	2165
20	Pollux W.	91 17 48	2065	93 9 41	2066	95 1 32	2068	96 53 20	2072
	Regulus W.	54 20 11	2053	56 12 22	2054	58 4 32	2057	59 56 38	2059
	JUPITER W.	50 38 43	2030	52 31 31	2031	54 24 17	2032	56 17 1	2035
	Antares E.	45 37 11	2050	43 44 55	2052	41 52 42	2054	40 0 32	2056
	α Aquilæ E.	99 6 2	2710	97 29 35	2705	95 53 2	2703	94 16 26	2702

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
13	JUPITER E. Spica E.	42 15 42 91 49 18	2672 2702	40 38 24 90 12 41	2653 2685	39 0 44 88 35 41	2699 2667	37 22 42 86 58 17	2623 2690
14	SUN W. α Arietis W. VENUS W. Aldebaran W. MARS W. Spica E.	129 0 31 87 20 55 85 48 11 55 39 6 36 52 10 78 45 18	2905 2571 2765 2655 2704 2560	130 32 43 89 0 30 87 22 59 57 16 46 38 28 44 77 5 28	2886 2552 2764 2634 2686 2542	132 5 20 90 40 31 88 58 14 58 54 55 40 5 43 75 25 13	2867 2534 2744 2612 2666 2584	133 38 21 92 20 57 90 33 55 60 33 34 41 43 8 73 44 33	2848 2515 2724 2591 2647 2506
15	α Arietis W. VENUS W. Aldebaran W. MARS W. Spica E. SATURN E. Antares E.	100 49 27 98 39 0 68 53 59 49 56 37 65 14 53 103 33 27 111 4 2	2426 2625 2489 2554 2416 2445 2410	102 32 24 100 17 21 70 35 28 51 36 35 63 31 41 101 50 53 109 20 42	2409 2606 2470 2536 2398 2424 2392	104 15 46 101 56 8 72 17 24 53 16 58 61 48 4 100 7 53 107 36 56	2391 2577 2450 2517 2382 2406 2375	105 59 33 103 35 21 73 59 47 54 57 47 60 4 3 98 24 27 105 52 45	2375 2567 2438 2500 2364 2389 2358
16	Aldebaran W. MARS W. Pollux W. Spica E. SATURN E. Antares E.	82 38 6 63 27 55 40 3 6 51 17 55 89 41 7 97 5 44	2346 2415 2309 2285 2306 2275	84 22 59 65 11 8 41 48 52 49 31 31 87 55 16 95 19 8	2329 2400 2292 2269 2290 2260	86 8 16 66 54 43 43 35 4 47 44 46 86 9 2 93 32 10	2314 2384 2274 2254 2276 2245	87 53 55 68 38 40 45 21 41 45 57 39 84 22 27 91 44 50	2300 2369 2258 2241 2261 2231
17	Aldebaran W. MARS W. Pollux W. Spica E. SATURN E. Antares E.	96 47 17 77 23 39 54 20 33 36 57 8 75 24 23 82 42 54	2255 2301 2186 2178 2196 2165	98 34 53 79 9 37 56 9 22 35 8 8 73 35 50 80 53 33	2223 2289 2173 2169 2186 2153	100 22 46 80 55 52 57 58 30 33 18 53 71 47 1 79 3 54	2213 2278 2161 2159 2175 2141	102 10 54 82 42 24 59 47 56 31 29 23 69 57 56 77 13 58	2204 2268 2150 2149 2166 2131
18	Aldebaran W. MARS W. Pollux W. Regulus W. SATURN E. Antares E.	111 14 45 91 38 43 68 59 3 31 38 5 60 49 14 68 0 36	2168 2223 2104 2094 2128 2087	113 4 1 93 26 36 70 49 56 33 49 13 58 58 58 66 9 17	2163 2216 2096 2086 2123 2081	114 53 24 95 14 40 72 41 1 35 40 33 57 8 34 64 17 48	2159 2210 2090 2080 2119 2075	116 42 53 97 2 53 74 32 15 37 32 3 55 18 4 62 26 10	2157 2204 2085 2073 2116 2069
19	MARS W. Pollux W. Regulus W. JUPITER W. SATURN E. Antares E. α Aquilæ E.	106 5 40 83 50 16 46 51 29 43 7 41 46 4 49 53 6 13 105 29 57	2187 2066 2055 2033 2115 2052 2747	107 54 27 85 42 7 48 43 37 45 0 23 44 14 12 51 14 0 103 54 20	2186 2065 2054 2031 2118 2050 2735	109 43 15 87 34 0 50 35 47 46 53 8 42 23 41 49 21 44 102 18 27	2186 2064 2053 2030 2122 2050 2725	111 32 4 89 25 54 52 27 59 48 45 55 40 33 16 47 29 27 100 42 20	2185 2064 2053 2030 2128 2050 2716
20	Pollux W. Regulus W. JUPITER W. Antares E. α Aquilæ E.	98 45 3 61 48 41 58 9 41 38 8 25 92 39 49	2074 2062 2037 2059 2704	100 36 42 63 40 39 60 2 17 36 16 23 91 3 14	2079 2066 2041 2063 2706	102 28 14 65 32 31 61 54 47 34 24 27 89 26 42	2083 2070 2045 2068 2711	104 19 39 67 24 17 63 47 11 32 32 38 87 50 17	2088 2075 2050 2072 2717

GREENWICH MEAN TIME.

LUNAR DISTANCES

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
21	Regulus W.	69 15 55	2081	71 7 24	2086	72 58 44	2093	74 49 54	2100
	JUPITER W.	65 39 27	2055	67 31 35	2061	69 23 34	2068	71 15 22	2075
	Antares E.	30 40 57	2076	28 49 24	2085	26 58 1	2091	25 6 48	2098
	α Aquilæ E.	86 14 0	2725	84 37 54	2736	83 2 2	2748	81 26 26	2761
22	Regulus W.	84 2 45	2143	85 52 39	2153	87 42 18	2165	89 31 41	2173
	JUPITER W.	80 31 27	2118	82 21 59	2127	84 12 17	2137	86 2 19	2148
	Spica W.	30 3 50	2159	31 53 19	2168	33 42 35	2176	35 31 38	2185
	α Aquilæ E.	73 33 37	2857	72 0 23	2881	70 27 40	2909	68 55 32	2937
	Fomalhaut E.	97 27 33	2494	95 46 11	2502	94 5 1	2511	92 24 3	2520
	SUN E.	129 33 40	2460	127 51 30	2470	126 9 34	2480	124 27 53	2491
23	Regulus W.	98 34 32	2231	100 22 13	2243	102 9 37	2256	103 56 42	2268
	JUPITER W.	95 8 21	2205	96 56 41	2217	98 44 43	2230	100 32 26	2243
	Spica W.	44 33 14	2239	46 20 44	2250	48 7 57	2262	49 54 52	2274
	α Aquilæ E.	61 24 58	3190	59 57 13	3166	58 30 23	3144	57 4 31	3127
	Fomalhaut E.	84 2 59	2583	82 23 41	2598	80 44 43	2614	79 6 7	2631
	SUN E.	116 3 25	2551	114 23 22	2564	112 43 37	2577	111 4 10	2590
24	Spica W.	58 44 57	2337	60 30 2	2350	62 14 48	2364	63 59 15	2376
	Fomalhaut E.	70 59 16	2729	69 23 15	2758	67 47 44	2775	66 12 44	2800
	SUN E.	102 51 33	2659	101 13 58	2674	99 36 43	2687	97 59 46	2708
25	Spica W.	72 36 48	2443	74 19 22	2455	76 1 38	2468	77 43 36	2482
	SATURN W.	34 57 42	2520	36 38 15	2535	38 18 40	2541	39 58 56	2548
	Antares W.	26 44 49	2437	28 27 31	2450	30 9 54	2464	31 51 58	2477
	Fomalhaut E.	58 26 16	2943	56 54 52	2977	55 24 10	3018	53 54 12	3049
	SUN E.	89 59 50	2774	88 24 48	2788	86 50 4	2802	85 15 39	2817
26	Spica W.	86 8 52	2545	87 49 2	2558	89 28 55	2570	91 8 31	2582
	SATURN W.	48 17 37	2591	49 56 45	2600	51 35 40	2610	53 14 21	2619
	Antares W.	40 17 48	2540	41 58 5	2553	43 38 5	2565	45 17 48	2577
	Fomalhaut E.	46 36 48	3277	45 12 10	3333	43 48 37	3395	42 26 15	3462
	SUN E.	77 28 8	2886	75 55 31	2900	74 23 12	2915	72 51 10	2927
27	Spica W.	99 22 28	2640	101 0 28	2652	102 38 13	2665	104 15 43	2674
	SATURN W.	61 24 30	2669	63 1 51	2679	64 38 59	2689	66 15 54	2698
	Antares W.	53 32 19	2635	55 10 26	2647	56 48 17	2657	58 25 54	2669
	SUN E.	65 15 10	2992	63 44 47	3004	62 14 39	3017	60 44 47	3028
28	SATURN W.	74 17 16	2746	75 52 55	2756	77 28 21	2765	79 3 35	2775
	Antares W.	66 30 22	2721	68 6 34	2731	69 42 33	2741	71 18 19	2750
	SUN E.	53 19 8	3088	51 50 44	3100	50 22 34	3111	48 54 38	3123
29	SATURN W.	86 56 46	2818	88 30 50	2827	90 4 43	2835	91 38 25	2843
	Antares W.	79 14 5	2795	80 48 39	2805	82 23 1	2813	83 57 12	2821
	SUN E.	41 38 25	3179	40 11 51	3190	38 45 30	3202	37 19 23	3213
30	SATURN W.	99 24 16	2884	100 56 55	2892	102 29 24	2900	104 1 43	2908
	Antares W.	91 45 28	2862	93 18 36	2869	94 51 35	2876	96 24 24	2884
	α Aquilæ W.	46 19 36	4281	47 26 46	4219	48 34 54	4163	49 43 55	4118
	SUN E.	30 12 13	3273	28 47 30	3287	27 23 3	3300	25 58 52	3315

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
21	Regulus	W.	76 40 53	2108	78 31 40	2116	80 22 15	2124	82 12 37	2134
	JUPITER	W.	73 7 0	2083	74 58 26	2090	76 49 40	2099	78 40 40	2108
	Antares	E.	23 15 46	2106	21 24 56	2114	19 34 18	2123	17 43 54	2131
	α Aquilæ	E.	79 51 7	2776	78 16 8	2794	76 41 32	2813	75 7 21	2834
22	Regulus	W.	91 20 49	2124	93 9 40	2135	94 58 15	2207	96 46 32	2218
	JUPITER	W.	87 52 5	2159	89 41 34	2170	91 30 47	2181	93 19 43	2193
	Spica	W.	37 20 28	2195	39 9 3	2205	40 57 23	2216	42 45 27	2227
	α Aquilæ	E.	67 24 0	2969	65 53 8	3003	64 22 59	3039	62 53 34	3078
	Fomalhaut	E.	90 43 18	2531	89 2 48	2543	87 22 34	2555	85 42 37	2569
	SUN	E.	122 46 27	2502	121 5 17	2514	119 24 23	2525	117 43 45	2538
23	Regulus	W.	105 43 29	2281	107 29 56	2294	109 16 5	2307	111 1 54	2320
	JUPITER	W.	102 19 50	2256	104 6 55	2268	105 53 41	2281	107 40 8	2295
	Spica	W.	51 41 30	2286	53 27 50	2299	55 13 51	2312	56 59 33	2324
	α Aquilæ	E.	55 39 41	3323	54 15 56	3385	52 53 22	3450	51 32 2	3522
	Fomalhaut	E.	77 27 54	2649	75 50 5	2668	74 12 42	2687	72 35 45	2708
	SUN	E.	109 25 1	2603	107 46 10	2618	106 7 39	2631	104 29 26	2646
24	Spica	W.	65 43 24	2390	67 27 13	2403	69 10 44	2417	70 53 55	2429
	Fomalhaut	E.	64 38 16	2226	63 4 22	2253	61 31 3	2281	59 58 20	2312
	SUN	E.	96 23 9	2716	94 46 50	2731	93 10 51	2745	91 35 11	2760
25	Spica	W.	79 25 15	2494	81 6 36	2507	82 47 39	2520	84 28 24	2533
	SATURN	W.	41 39 3	2556	43 18 59	2564	44 58 44	2572	46 38 17	2582
	Antares	W.	33 33 44	2489	35 15 12	2502	36 56 22	2515	38 37 14	2528
	Fomalhaut	E.	52 25 0	3089	50 56 37	3131	49 29 5	3176	48 2 27	3225
	SUN	E.	83 41 33	2831	82 7 45	2845	80 34 15	2859	79 1 3	2872
26	Spica	W.	92 47 51	2594	94 26 54	2606	96 5 41	2618	97 44 12	2629
	SATURN	W.	54 52 50	2629	56 31 5	2639	58 9 7	2649	59 46 55	2659
	Antares	W.	46 57 15	2589	48 36 25	2601	50 15 19	2612	51 53 57	2624
	Fomalhaut	E.	41 5 8	3535	39 45 22	3615	38 27 4	3704	37 10 21	3802
	SUN	E.	71 19 25	2940	69 47 57	2953	68 16 45	2966	66 45 50	2978
27	Spica	W.	105 52 58	2684	107 29 59	2695	109 6 45	2706	110 43 17	2716
	SATURN	W.	67 52 36	2708	69 29 5	2718	71 5 21	2727	72 41 25	2737
	Antares	W.	60 3 16	2679	61 40 24	2690	63 17 17	2701	64 53 56	2710
	SUN	E.	59 15 9	3041	57 45 47	3052	56 16 39	3065	54 47 46	3077
28	SATURN	W.	80 38 36	2783	82 13 26	2792	83 48 4	2801	85 22 31	2810
	Antares	W.	72 53 53	2760	74 29 14	2769	76 4 23	2778	77 39 20	2787
	SUN	E.	47 26 56	3134	45 59 28	3145	44 32 13	3157	43 5 12	3168
29	SATURN	W.	93 11 57	2852	94 45 18	2860	96 18 28	2869	97 51 27	2876
	Antares	W.	85 31 12	2829	87 5 2	2838	88 38 41	2845	90 12 10	2854
	SUN	E.	35 53 29	3225	34 27 49	3236	33 2 23	3248	31 37 11	3260
30	SATURN	W.	105 33 52	2916	107 5 51	2924	108 37 40	2931	110 9 20	2939
	Antares	W.	97 57 3	2891	99 29 33	2898	101 1 54	2905	102 34 6	2913
	α Aquilæ	W.	50 53 45	4066	52 4 20	4024	53 15 36	3986	54 27 29	3952
	SUN	E.	24 34 58	3331	23 11 22	3349	21 48 7	3368	20 25 14	3389

AT GREENWICH APPARENT NOON.

AT GREENWICH APPARENT NOON.										
Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to	Diff. for 1 Hour.	
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.		Subtracted from Apparent Time.		
Thur.	1	^h 0 ^m 44 ^s 13.59	9.105	N. 4 45 23.4	+57.76	16 1.98	64.53	^m 3 ^s 47.99	0.749	
Frid.	2	0 47 52.18	9.111	5 8 27.1	57.54	16 1.70	64.55	3 30.07	0.744	
Sat.	3	0 51 30.90	9.117	5 31 25.2	57.30	16 1.42	64.57	3 12.29	0.738	
SUN.	4	0 55 9.78	9.124	5 54 17.5	+57.05	16 1.15	64.59	2 54.66	0.731	
Mon.	5	0 58 48.82	9.131	6 17 3.5	56.78	16 0.88	64.62	2 37.19	0.724	
Tues.	6	1 2 28.04	9.139	6 39 43.0	56.50	16 0.61	64.65	2 19.91	0.716	
Wed.	7	1 6 7.46	9.147	7 2 15.6	+56.20	16 0.34	64.68	2 2.83	0.707	
Thur.	8	1 9 47.10	9.156	7 24 40.8	55.89	16 0.07	64.72	1 45.95	0.698	
Frid.	9	1 13 26.96	9.166	7 46 58.4	55.57	15 59.80	64.76	1 29.31	0.688	
Sat.	10	1 17 7.08	9.177	8 9 8.1	+55.23	15 59.53	64.80	1 12.91	0.677	
SUN.	11	1 20 47.45	9.188	8 31 9.5	54.88	15 59.27	64.84	0 56.78	0.666	
Mon.	12	1 24 28.11	9.200	8 53 2.3	54.52	15 59.00	64.89	0 40.93	0.654	
Tues.	13	1 28 9.07	9.213	9 14 46.1	+54.14	15 58.74	64.93	0 25.38	0.641	
Wed.	14	1 31 50.34	9.227	9 36 20.8	53.75	15 58.47	64.98	0 10.14	0.628	
Thur.	15	1 35 31.96	9.241	9 57 45.8	53.34	15 58.21	65.03	0 4.76	0.614	
Frid.	16	1 39 13.92	9.256	10 19 1.0	+52.92	15 57.95	65.09	0 19.31	0.598	
Sat.	17	1 42 56.26	9.272	10 40 6.1	52.49	15 57.68	65.15	0 33.49	0.582	
SUN.	18	1 46 39.00	9.289	11 1 0.6	52.05	15 57.42	65.21	0 47.27	0.566	
Mon.	19	1 50 22.14	9.306	11 21 44.4	+51.59	15 57.15	65.27	1 0.65	0.549	
Tues.	20	1 54 5.71	9.324	11 42 17.1	51.12	15 56.89	65.33	1 13.60	0.531	
Wed.	21	1 57 49.72	9.343	12 2 38.4	50.64	15 56.63	65.39	1 26.10	0.512	
Thur.	22	2 1 34.19	9.363	12 22 47.9	+50.15	15 56.37	65.46	1 38.16	0.492	
Frid.	23	2 5 19.14	9.383	12 42 45.4	49.64	15 56.11	65.52	1 49.73	0.472	
Sat.	24	2 9 4.57	9.403	13 2 30.4	49.12	15 55.85	65.59	2 0.82	0.452	
SUN.	25	2 12 50.50	9.424	13 22 2.8	+48.58	15 55.59	65.66	2 11.42	0.431	
Mon.	26	2 16 36.94	9.446	13 41 22.1	48.03	15 55.34	65.73	2 21.50	0.410	
Tues.	27	2 20 23.90	9.468	14 0 28.0	47.46	15 55.09	65.80	2 31.08	0.388	
Wed.	28	2 24 11.38	9.490	14 19 20.1	+46.88	15 54.84	65.88	2 40.12	0.366	
Thur.	29	2 27 59.40	9.512	14 37 58.2	46.28	15 54.59	65.95	2 48.64	0.344	
Frid.	30	2 31 47.96	9.534	14 56 21.7	45.67	15 54.35	66.03	2 56.62	0.322	
Sat.	31	2 35 37.05	9.557	N. 15 14 30.6	+45.05	15 54.11	66.10	3 4.06	0.299	

NOTE.—The mean time of semidiameter passing may be found by subtracting 0.18 from the sidereal time.

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Subtracted from	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
						Added to Mean Time.		
Thur.	1	h m s 0 44 13.02	s 9.107	N. ° ' " 4 45 19.8	" +57.77	m s 3 48.04	s 0.749	h m s 0 40 24.98
Frid.	2	0 47 51.65	9.112	5 8 23.7	57.55	3 30.12	0.744	0 44 21.53
Sat.	3	0 51 30.42	9.118	5 31 22.1	57.31	3 12.33	0.738	0 48 18.09
SUN.	4	0 55 9.33	9.125	5 54 14.7	+57.06	2 54.69	0.731	0 52 14.64
Mon.	5	0 58 48.42	9.132	6 17 1.0	56.79	2 37.23	0.724	0 56 11.19
Tues.	6	1 2 27.69	9.140	6 39 40.8	56.51	2 19.94	0.716	1 0 7.75
Wed.	7	1 6 7.15	9.149	7 2 13.6	+56.22	2 2.85	0.708	1 4 4.30
Thur.	8	1 9 46.83	9.158	7 24 39.2	55.91	1 45.97	0.699	1 8 0.85
Frid.	9	1 13 26.74	9.168	7 46 57.1	55.58	1 29.33	0.688	1 11 57.41
Sat.	10	1 17 6.89	9.179	8 9 7.0	+55.24	1 12.93	0.677	1 15 53.96
SUN.	11	1 20 47.31	9.190	8 31 8.6	54.89	0 56.79	0.666	1 19 50.52
Mon.	12	1 24 28.01	9.202	8 53 1.7	54.52	0 40.94	0.654	1 23 47.07
Tues.	13	1 28 9.00	9.215	9 14 45.8	+54.14	0 25.38	0.642	1 27 43.62
Wed.	14	1 31 50.32	9.229	9 36 20.6	53.75	0 10.14	0.629	1 31 40.18
Thur.	15	1 35 31.97	9.243	9 57 45.9	53.35	0 4.77	0.614	1 35 36.73
Frid.	16	1 39 13.97	9.258	10 19 1.3	+52.93	0 19.32	0.599	1 39 33.29
Sat.	17	1 42 56.35	9.274	10 40 6.6	52.50	0 33.49	0.583	1 43 29.84
SUN.	18	1 46 39.12	9.291	11 1 1.3	52.06	0 47.28	0.566	1 47 26.40
Mon.	19	1 50 22.29	9.308	11 21 45.3	+51.60	1 0.66	0.549	1 51 22.95
Tues.	20	1 54 5.90	9.326	11 42 18.2	51.13	1 13.61	0.531	1 55 19.51
Wed.	21	1 57 49.94	9.345	12 2 39.6	50.65	1 26.12	0.512	1 59 16.06
Thur.	22	2 1 34.45	9.364	12 22 49.3	+50.15	1 38.17	0.492	2 3 12.62
Frid.	23	2 5 19.42	9.384	12 42 46.9	49.64	1 49.75	0.472	2 7 9.17
Sat.	24	2 9 4.89	9.405	13 2 32.1	49.12	2 0.84	0.452	2 11 5.72
SUN.	25	2 12 50.85	9.426	13 22 4.6	+48.58	2 11.43	0.431	2 15 2.28
Mon.	26	2 16 37.31	9.447	13 41 24.0	48.03	2 21.52	0.410	2 18 58.83
Tues.	27	2 20 24.30	9.469	14 0 30.0	47.46	2 31.09	0.388	2 22 55.39
Wed.	28	2 24 11.81	9.491	14 19 22.2	+46.88	2 40.14	0.366	2 26 51.95
Thur.	29	2 27 59.85	9.513	14 38 0.3	46.29	2 48.65	0.344	2 30 48.50
Frid.	30	2 31 48.42	9.535	14 56 24.0	45.68	2 56.63	0.322	2 34 45.06
Sat.	31	2 35 37.54	9.558	N. 15 14 32.9	+45.06	3 4.07	0.299	2 38 41.61

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign + prefixed to the hourly change of declination indicates that north declinations are increasing.

Diff. for 1 Hour,
+9^h 85^m 6^s.
(Table III.)

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ'					
1	91	12 1 39.8	1 15.2	147.88	+ 0.23	0.0000100	+52.4	h m s 23 15 45.73
2	92	13 0 48.0	0 23.3	147.80	0.30	0.0001355	52.1	23 11 49.83
3	93	13 59 54.2	59 29.4	147.71	0.34	0.0002601	51.8	23 7 53.92
4	94	14 58 58.2	58 33.3	147.62	+ 0.36	0.0003841	+51.5	23 3 58.01
5	95	15 58 0.1	57 35.0	147.53	0.34	0.0005073	51.3	23 0 2.10
6	96	16 56 59.7	56 34.5	147.44	0.30	0.0006299	51.0	22 56 6.19
7	97	17 55 57.1	55 31.8	147.34	+ 0.23	0.0007518	+50.7	22 52 10.29
8	98	18 54 52.1	54 26.7	147.24	0.13	0.0008732	50.5	22 48 14.38
9	99	19 53 45.0	53 19.5	147.15	+ 0.02	0.0009942	50.3	22 44 18.47
10	100	20 52 35.4	52 9.8	147.06	— 0.11	0.0011145	+50.1	22 40 22.56
11	101	21 51 23.7	50 57.9	146.96	— 0.24	0.0012347	50.0	22 36 26.66
12	102	22 50 9.6	49 43.7	146.87	0.37	0.0013548	49.9	22 32 30.75
13	103	23 48 53.3	48 27.3	146.78	— 0.49	0.0014746	+49.9	22 28 34.84
14	104	24 47 34.9	47 8.8	146.69	0.60	0.0015943	49.9	22 24 38.93
15	105	25 46 14.4	45 48.2	146.60	0.69	0.0017142	49.9	22 20 43.02
16	106	26 44 51.8	44 25.4	146.52	— 0.76	0.0018340	+49.9	22 16 47.11
17	107	27 43 27.3	43 0.8	146.44	0.79	0.0019537	49.9	22 12 51.20
18	108	28 42 0.8	41 34.2	146.36	0.79	0.0020735	49.9	22 8 55.30
19	109	29 40 32.5	40 5.7	146.28	— 0.78	0.0021931	+49.8	22 4 59.39
20	110	30 39 2.4	38 35.5	146.21	0.72	0.0023126	49.7	22 1 3.48
21	111	31 37 30.7	37 3.7	146.14	0.65	0.0024316	49.5	21 57 7.57
22	112	32 35 57.3	35 30.2	146.07	— 0.54	0.0025504	+49.3	21 53 11.66
23	113	33 34 22.3	33 55.0	146.01	0.42	0.0026685	49.1	21 49 15.75
24	114	34 32 45.8	32 18.4	145.94	0.29	0.0027861	48.8	21 45 19.84
25	115	35 31 7.6	30 40.1	145.88	— 0.15	0.0029026	+48.4	21 41 23.93
26	116	36 29 28.0	29 0.3	145.81	— 0.02	0.0030181	47.9	21 37 28.02
27	117	37 27 46.7	27 18.9	145.75	+ 0.10	0.0031324	47.3	21 33 32.12
28	118	38 26 3.9	25 36.0	145.68	+ 0.19	0.0032453	+46.7	21 29 36.21
29	119	39 24 19.5	23 51.4	145.62	0.27	0.0033569	46.1	21 25 40.30
30	120	40 22 33.6	22 5.4	145.55	0.32	0.0034668	45.5	21 21 44.39
31	121	41 20 45.9	20 17.6	145.48	+ 0.35	0.0035752	+44.8	21 17 48.48
NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ' to the mean equinox of January 0 th .								Diff. for 1 Hour, —0 ^h .8296. (Table II.)

GREENWICH MEAN TIME.

Day of the Month.	THE MOON'S								
	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
							h m	m	d
1	14 54.4	14 51.9	54 35.6	-0.79	54 26.7	-0.70	6		29.0
2	14 49.8	14 48.0	54 18.9	0.60	54 12.2	0.51	0 9.7	1.73	0.3
3	14 46.5	14 45.4	54 6.7	0.40	54 2.6	0.28	0 51.9	1.79	1.3
4	14 44.6	14 44.3	53 59.9	-0.16	53 58.7	-0.03	1 35.9	1.88	2.3
5	14 44.5	14 45.1	53 59.2	+0.12	54 1.5	+0.28	2 22.2	1.98	3.3
6	14 46.2	14 48.0	54 5.8	0.44	54 12.1	0.61	3 10.8	2.07	4.3
7	14 50.3	14 53.2	54 20.5	+0.80	54 31.2	+0.99	4 1.5	2.14	5.3
8	14 56.7	15 0.9	54 44.2	1.18	54 59.5	1.38	4 53.3	2.17	6.3
9	15 5.7	15 11.1	55 17.2	1.57	55 37.1	1.75	5 45.2	2.15	7.3
10	15 17.1	15 23.7	55 59.2	+1.93	56 23.3	+2.08	6 36.4	2.11	8.3
11	15 30.7	15 38.2	56 49.2	2.22	57 16.5	2.33	7 26.5	2.06	9.3
12	15 45.9	15 53.9	57 45.0	2.40	58 14.1	2.43	8 15.5	2.03	10.3
13	16 1.8	16 9.6	58 43.2	+2.40	59 11.8	+2.33	9 4.0	2.02	11.3
14	16 17.0	16 23.9	59 39.2	2.20	60 4.6	2.01	9 53.0	2.07	12.3
15	16 30.1	16 35.4	60 27.4	1.75	60 46.7	1.45	10 43.6	2.16	13.3
16	16 39.6	16 42.6	61 2.1	+1.10	61 13.1	+0.71	11 37.0	2.30	14.3
17	16 44.3	16 44.6	61 19.2	+0.30	61 20.3	-0.11	12 34.3	2.47	15.3
18	16 43.5	16 41.2	61 16.5	-0.52	61 7.9	0.90	13 35.6	2.62	16.3
19	16 37.6	16 33.1	60 54.9	-1.24	60 38.1	-1.54	14 39.7	2.70	17.3
20	16 27.6	16 21.4	60 17.9	1.79	59 55.1	1.98	15 44.0	2.64	18.3
21	16 14.6	16 7.5	59 30.4	2.12	59 4.3	2.20	16 45.7	2.49	19.3
22	16 0.3	15 53.0	58 37.6	-2.23	58 10.8	-2.22	17 42.9	2.27	20.3
23	15 45.8	15 38.8	57 44.4	2.17	57 18.7	2.09	18 34.9	2.06	21.3
24	15 32.1	15 25.8	56 54.2	1.99	56 30.9	1.88	19 22.3	1.89	22.3
25	15 19.8	15 14.4	56 9.2	-1.74	55 49.2	-1.60	20 6.2	1.77	23.3
26	15 9.4	15 4.9	55 30.9	1.46	55 14.2	1.32	20 47.8	1.70	24.3
27	15 0.8	14 57.2	54 59.3	1.17	54 46.1	1.03	21 28.3	1.68	25.3
28	14 54.1	14 51.4	54 34.6	-0.90	54 24.6	-0.77	22 8.9	1.70	26.3
29	14 49.1	14 47.2	54 16.2	0.64	54 9.2	0.52	22 50.4	1.76	27.3
30	14 45.6	14 44.5	54 3.6	0.40	53 59.4	0.29	23 33.7	1.85	28.3
31	14 43.7	14 43.4	53 56.6	-0.18	53 55.2	-0.07	6		29.3

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 1.					SATURDAY 3.				
0	h m s	s	N. ° ' "	"	0	h m s	s	N. ° ' "	"
0	10 1.04	1.8126	5 21 53.1	13.612	1	38 39.80	1.9006	15 30 1.0	11.424
1	0 11 49.81	1.8132	5 35 29.0	13.584	1	40 33.92	1.9035	15 41 24.5	11.358
2	0 13 38.62	1.8138	5 49 3.2	13.556	2	42 28.22	1.9066	15 52 44.0	11.298
3	0 15 27.47	1.8145	6 2 35.8	13.528	3	44 22.71	1.9097	16 3 59.6	11.237
4	0 17 16.36	1.8153	6 16 6.6	13.499	4	46 17.38	1.9127	16 15 11.2	11.159
5	0 19 5.30	1.8161	6 29 35.6	13.469	5	48 12.23	1.9158	16 26 18.7	11.091
6	0 20 54.29	1.8169	6 43 2.9	13.439	6	50 7.27	1.9189	16 37 22.1	11.022
7	0 22 43.33	1.8178	6 56 28.3	13.407	7	52 2.50	1.9222	16 48 21.4	10.952
8	0 24 32.43	1.8187	7 9 51.7	13.374	8	53 57.93	1.9254	16 59 16.4	10.881
9	0 26 21.58	1.8198	7 23 13.1	13.340	9	55 53.55	1.9287	17 10 7.1	10.809
10	0 28 10.80	1.8209	7 36 32.5	13.306	10	57 49.37	1.9320	17 20 53.5	10.737
11	0 30 0.09	1.8220	7 49 49.8	13.271	11	59 45.39	1.9353	17 31 35.6	10.665
12	0 31 49.44	1.8231	8 3 5.0	13.236	12	1 41.60	1.9386	17 42 13.3	10.592
13	0 33 38.87	1.8245	8 16 18.1	13.199	13	2 3 38.02	1.9420	17 52 46.6	10.517
14	0 35 28.38	1.8258	8 29 28.9	13.161	14	2 5 34.64	1.9454	18 3 15.3	10.441
15	0 37 17.96	1.8271	8 42 37.4	13.122	15	2 7 31.47	1.9489	18 13 39.5	10.366
16	0 39 7.63	1.8286	8 55 43.6	13.084	16	2 9 28.51	1.9523	18 23 59.2	10.289
17	0 40 57.39	1.8301	9 8 47.5	13.045	17	2 11 25.75	1.9557	18 34 14.2	10.211
18	0 42 47.24	1.8316	9 21 49.0	13.005	18	2 13 23.20	1.9592	18 44 24.5	10.132
19	0 44 37.18	1.8332	9 34 48.1	12.963	19	2 15 20.86	1.9628	18 54 30.1	10.053
20	0 46 27.22	1.8348	9 47 44.6	12.921	20	2 17 18.74	1.9664	19 4 30.9	9.973
21	0 48 17.36	1.8365	10 0 38.6	12.878	21	2 19 16.83	1.9700	19 14 26.9	9.892
22	0 50 7.60	1.8383	10 13 30.0	12.834	22	2 21 15.14	1.9737	19 24 18.0	9.811
23	0 51 57.95	1.8401	N. 10 26 18.7	12.790	23	2 23 13.67	1.9774	N. 19 34 4.2	9.728
FRIDAY 2.					SUNDAY 4.				
0	0 53 48.41	1.8419	N. 10 39 4.8	12.746	0	2 25 12.41	1.9808	N. 19 43 45.4	9.645
1	0 55 38.98	1.8438	10 51 48.2	12.699	1	2 27 11.37	1.9845	19 53 21.6	9.561
2	0 57 29.67	1.8457	11 4 28.7	12.652	2	2 29 10.55	1.9882	20 2 52.7	9.477
3	0 59 20.47	1.8477	11 17 6.4	12.604	3	2 31 9.96	1.9920	20 12 18.8	9.392
4	1 1 11.39	1.8498	11 29 41.2	12.556	4	2 33 9.59	1.9957	20 21 39.7	9.305
5	1 3 2.44	1.8519	11 42 13.1	12.507	5	2 35 9.44	1.9994	20 30 55.4	9.217
6	1 4 53.62	1.8541	11 54 42.1	12.458	6	2 37 9.52	2.0032	20 40 5.8	9.129
7	1 6 44.93	1.8563	12 7 8.1	12.406	7	2 39 9.82	2.0069	20 49 10.9	9.041
8	1 8 36.37	1.8585	12 19 30.9	12.354	8	2 41 10.35	2.0107	20 58 10.7	8.952
9	1 10 27.95	1.8607	12 31 50.6	12.302	9	2 43 11.10	2.0144	21 7 5.1	8.862
10	1 12 19.66	1.8631	12 44 7.2	12.250	10	2 45 12.08	2.0182	21 15 54.1	8.770
11	1 14 11.52	1.8655	12 56 20.6	12.196	11	2 47 13.28	2.0220	21 24 37.5	8.678
12	1 16 3.52	1.8679	13 8 30.7	12.141	12	2 49 14.72	2.0259	21 33 15.4	8.586
13	1 17 55.67	1.8704	13 20 37.5	12.086	13	2 51 16.39	2.0297	21 41 47.7	8.492
14	1 19 47.97	1.8729	13 32 41.0	12.030	14	2 53 18.28	2.0334	21 50 14.4	8.398
15	1 21 40.42	1.8755	13 44 41.1	11.974	15	2 55 20.40	2.0372	21 58 35.5	8.304
16	1 23 33.03	1.8782	13 56 37.7	11.914	16	2 57 22.75	2.0411	22 6 50.9	8.208
17	1 25 25.80	1.8808	14 8 30.8	11.856	17	2 59 25.33	2.0450	22 15 0.5	8.111
18	1 27 18.72	1.8834	14 20 20.4	11.797	18	3 1 28.15	2.0488	22 23 4.2	8.014
19	1 29 11.81	1.8862	14 32 6.4	11.737	19	3 3 31.19	2.0526	22 31 2.1	7.916
20	1 31 5.07	1.8890	14 43 48.8	11.676	20	3 5 34.46	2.0564	22 38 54.1	7.817
21	1 32 58.49	1.8918	14 55 27.5	11.613	21	3 7 37.96	2.0602	22 46 40.2	7.718
22	1 34 52.08	1.8947	15 7 2.4	11.551	22	3 9 41.69	2.0641	22 54 20.3	7.618
23	1 36 45.85	1.8977	15 18 33.6	11.488	23	3 11 45.65	2.0679	23 1 54.4	7.517
24	1 38 39.80	1.9006	N. 15 30 1.0	11.424	24	3 13 49.84	2.0717	N. 23 9 22.4	7.416

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 5.					WEDNESDAY 7.				
0	3 13 49.84	a. 0717	N. 23 9 22.4	7.416	0	4 57 14.29	a. 2230	N. 26 55 27.3	1.777
1	3 15 54.26	a. 0735	23 16 44.3	7.313	1	4 59 27.73	a. 2250	26 57 10.0	1.647
2	3 17 58.90	a. 0753	23 24 0.0	7.210	2	5 1 41.29	a. 2271	26 58 44.9	1.517
3	3 20 3.77	a. 0831	23 31 9.5	7.107	3	5 3 54.98	a. 2291	27 0 12.0	1.386
4	3 22 8.87	a. 0868	23 38 12.8	7.002	4	5 6 8.78	a. 2309	27 1 31.2	1.254
5	3 24 14.19	a. 0905	23 45 9.7	6.896	5	5 8 22.68	a. 2326	27 2 42.5	1.122
6	3 26 19.73	a. 0942	23 52 0.3	6.791	6	5 10 36.69	a. 2343	27 3 45.8	0.989
7	3 28 25.50	a. 0980	23 58 44.6	6.684	7	5 12 50.80	a. 2360	27 4 41.2	0.857
8	3 30 31.49	a. 1018	24 5 22.4	6.577	8	5 15 5.01	a. 2377	27 5 28.7	0.726
9	3 32 37.71	a. 1055	24 11 53.8	6.469	9	5 17 19.32	a. 2392	27 6 8.3	0.593
10	3 34 44.15	a. 1091	24 18 18.7	6.360	10	5 19 33.72	a. 2407	27 6 39.9	0.460
11	3 36 50.80	a. 1127	24 24 37.0	6.250	11	5 21 48.20	a. 2421	27 7 3.5	0.326
12	3 38 57.67	a. 1163	24 30 48.7	6.140	12	5 24 2.77	a. 2435	27 7 19.1	0.192
13	3 41 4.76	a. 1200	24 36 53.8	6.029	13	5 26 17.42	a. 2448	27 7 26.6	+ 0.058
14	3 43 12.07	a. 1236	24 42 52.2	5.918	14	5 28 32.14	a. 2460	27 7 26.1	- 0.075
15	3 45 19.59	a. 1271	24 48 44.0	5.807	15	5 30 46.94	a. 2472	27 7 17.6	0.209
16	3 47 27.32	a. 1306	24 54 29.0	5.693	16	5 33 1.81	a. 2483	27 7 1.0	0.344
17	3 49 35.26	a. 1342	25 0 7.2	5.579	17	5 35 16.74	a. 2493	27 6 36.3	0.479
18	3 51 43.42	a. 1377	25 5 38.5	5.464	18	5 37 31.72	a. 2508	27 6 3.5	0.614
19	3 53 51.78	a. 1411	25 11 2.9	5.350	19	5 39 46.76	a. 2511	27 5 22.6	0.749
20	3 56 0.35	a. 1445	25 16 20.5	5.236	20	5 42 1.85	a. 2520	27 4 33.6	0.884
21	3 58 9.12	a. 1479	25 21 31.2	5.120	21	5 44 17.00	a. 2528	27 3 36.5	1.019
22	4 0 18.09	a. 1513	25 26 34.9	5.005	22	5 46 32.19	a. 2534	27 2 31.3	1.154
23	4 2 27.27	a. 1547	N. 25 31 31.5	4.885	23	5 48 47.41	a. 2540	N. 27 1 18.0	1.290
TUESDAY 6.					THURSDAY 8.				
0	4 4 36.65	a. 1579	N. 25 36 21.1	4.767	0	5 51 2.67	a. 2546	N. 26 59 56.5	1.426
1	4 6 46.22	a. 1611	25 41 3.6	4.648	1	5 53 17.96	a. 2551	26 58 26.9	1.562
2	4 8 55.98	a. 1643	25 45 38.9	4.529	2	5 55 33.28	a. 2556	26 56 49.1	1.697
3	4 11 5.94	a. 1675	25 50 7.1	4.410	3	5 57 48.63	a. 2560	26 55 3.2	1.833
4	4 13 16.08	a. 1706	25 54 28.1	4.290	4	6 0 4.00	a. 2563	26 53 9.1	1.969
5	4 15 26.41	a. 1737	25 58 41.9	4.169	5	6 2 19.38	a. 2565	26 51 6.9	2.105
6	4 17 36.92	a. 1767	26 2 48.4	4.047	6	6 4 34.78	a. 2567	26 48 56.5	2.241
7	4 19 47.61	a. 1797	26 6 47.6	3.925	7	6 6 50.19	a. 2568	26 46 38.0	2.377
8	4 21 58.48	a. 1827	26 10 39.4	3.802	8	6 9 5.60	a. 2568	26 44 11.3	2.513
9	4 24 9.53	a. 1856	26 14 23.9	3.680	9	6 11 21.01	a. 2568	26 41 36.4	2.649
10	4 26 20.75	a. 1884	26 18 1.0	3.557	10	6 13 36.42	a. 2567	26 38 53.4	2.784
11	4 28 32.14	a. 1912	26 21 30.7	3.434	11	6 15 51.82	a. 2566	26 36 2.3	2.920
12	4 30 43.69	a. 1939	26 24 52.9	3.307	12	6 18 7.21	a. 2564	26 33 3.0	3.057
13	4 32 55.41	a. 1967	26 28 7.6	3.182	13	6 20 22.59	a. 2562	26 29 55.5	3.193
14	4 35 7.29	a. 1993	26 31 14.8	3.057	14	6 22 37.95	a. 2558	26 26 39.9	3.328
15	4 37 19.33	a. 2019	26 34 14.5	2.933	15	6 24 53.29	a. 2555	26 23 16.2	3.463
16	4 39 31.52	a. 2045	26 37 6.6	2.805	16	6 27 8.61	a. 2551	26 19 44.4	3.598
17	4 41 43.87	a. 2071	26 39 51.1	2.677	17	6 29 23.90	a. 2546	26 16 4.4	3.734
18	4 43 56.37	a. 2095	26 42 27.9	2.550	18	6 31 39.16	a. 2540	26 12 16.3	3.869
19	4 46 9.01	a. 2118	26 44 57.1	2.422	19	6 33 54.38	a. 2534	26 8 20.1	4.004
20	4 48 21.79	a. 2142	26 47 18.6	2.294	20	6 36 9.57	a. 2528	26 4 15.8	4.139
21	4 50 34.72	a. 2166	26 49 32.4	2.166	21	6 38 24.72	a. 2521	26 0 3.4	4.274
22	4 52 47.78	a. 2188	26 51 38.5	2.037	22	6 40 39.82	a. 2513	25 55 42.9	4.409
23	4 55 0.97	a. 2209	26 53 36.8	1.907	23	6 42 54.87	a. 2504	25 51 14.3	4.543
24	4 57 14.29	a. 2230	N. 26 55 27.3	1.777	24	6 45 9.87	a. 2496	N. 25 46 37.7	4.677

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 9.					SUNDAY 11.				
0	6 45 9.87	2.2496	N. 25 46 37.7	4.677	0	8 31 26.58	2.1708	N. 19 34 6.1	10.683
1	6 47 24.82	2.2477	25 41 53.1	4.811	1	8 33 36.77	2.1689	19 23 23.0	10.774
2	6 49 39.71	2.2477	25 37 0.4	4.945	2	8 35 46.85	2.1671	19 12 33.2	10.885
3	6 51 54.54	2.2467	25 31 59.7	5.078	3	8 37 56.82	2.1652	19 1 36.8	10.995
4	6 54 9.31	2.2456	25 26 51.0	5.212	4	8 40 6.68	2.1634	18 50 33.8	11.104
5	6 56 24.01	2.2445	25 21 34.3	5.345	5	8 42 16.43	2.1616	18 39 24.3	11.212
6	6 58 38.65	2.2434	25 16 9.6	5.477	6	8 44 26.07	2.1598	18 28 8.4	11.319
7	7 0 53.22	2.2422	25 10 37.0	5.610	7	8 46 35.60	2.1580	18 16 46.0	11.426
8	7 3 7.71	2.2409	25 4 56.4	5.742	8	8 48 45.03	2.1563	18 5 17.2	11.532
9	7 5 22.12	2.2396	24 59 7.9	5.874	9	8 50 54.36	2.1547	17 53 42.1	11.637
10	7 7 36.46	2.2383	24 53 11.5	6.005	10	8 53 3.59	2.1529	17 42 0.7	11.742
11	7 9 50.72	2.2369	24 47 7.3	6.136	11	8 55 12.71	2.1512	17 30 13.1	11.846
12	7 12 4.89	2.2355	24 40 55.2	6.267	12	8 57 21.73	2.1496	17 18 19.2	11.949
13	7 14 18.98	2.2341	24 34 35.3	6.398	13	8 59 30.66	2.1480	17 6 19.2	12.051
14	7 16 32.98	2.2326	24 28 7.5	6.528	14	9 1 39.49	2.1463	16 54 13.1	12.152
15	7 18 46.89	2.2311	24 21 31.9	6.657	15	9 3 48.22	2.1447	16 42 0.9	12.253
16	7 21 0.71	2.2295	24 14 48.6	6.787	16	9 5 56.86	2.1432	16 29 42.7	12.353
17	7 23 14.43	2.2279	24 7 57.5	6.916	17	9 8 5.41	2.1418	16 17 18.5	12.452
18	7 25 28.06	2.2263	24 0 58.7	7.044	18	9 10 13.88	2.1404	16 4 48.5	12.549
19	7 27 41.59	2.2247	23 53 52.2	7.172	19	9 12 22.26	2.1390	15 52 12.6	12.646
20	7 29 55.02	2.2230	23 46 38.0	7.300	20	9 14 30.56	2.1376	15 39 30.9	12.743
21	7 32 8.35	2.2213	23 39 16.2	7.427	21	9 16 38.77	2.1362	15 26 43.4	12.839
22	7 34 21.58	2.2197	23 31 46.7	7.554	22	9 18 46.90	2.1349	15 13 50.2	12.935
23	7 36 34.71	2.2179	N. 23 24 9.7	7.680	23	9 20 54.96	2.1336	N. 15 0 51.4	13.027
SATURDAY 10.					MONDAY 12.				
0	7 38 47.73	2.2161	N. 23 16 25.1	7.807	0	9 23 2.94	2.1324	N. 14 47 47.0	13.120
1	7 41 0.64	2.2145	23 8 32.9	7.933	1	9 25 10.85	2.1312	14 34 37.0	13.212
2	7 43 13.45	2.2128	23 0 33.2	8.057	2	9 27 18.69	2.1301	14 21 21.6	13.302
3	7 45 26.15	2.2108	22 52 26.1	8.181	3	9 29 26.46	2.1290	14 8 0.8	13.392
4	7 47 38.74	2.2089	22 44 11.5	8.305	4	9 31 34.17	2.1280	13 54 34.6	13.482
5	7 49 51.22	2.2070	22 35 49.5	8.428	5	9 33 41.82	2.1269	13 41 3.0	13.570
6	7 52 3.58	2.2051	22 27 20.1	8.551	6	9 35 49.40	2.1259	13 27 26.2	13.657
7	7 54 15.83	2.2032	22 18 43.3	8.674	7	9 37 56.93	2.1251	13 13 44.2	13.743
8	7 56 27.97	2.2014	22 9 59.2	8.795	8	9 40 4.41	2.1242	12 59 57.0	13.828
9	7 58 40.00	2.1995	22 1 7.9	8.916	9	9 42 11.84	2.1234	12 46 4.8	13.912
10	8 0 51.91	2.1976	21 52 9.3	9.037	10	9 44 19.22	2.1227	12 32 7.6	13.996
11	8 3 3.71	2.1957	21 43 3.4	9.158	11	9 46 26.56	2.1219	12 18 5.3	14.079
12	8 5 15.39	2.1937	21 33 50.3	9.277	12	9 48 33.85	2.1212	12 3 58.1	14.160
13	8 7 26.96	2.1918	21 24 30.1	9.396	13	9 50 41.10	2.1206	11 49 46.1	14.240
14	8 9 38.41	2.1899	21 15 2.8	9.515	14	9 52 48.32	2.1201	11 35 29.3	14.318
15	8 11 49.75	2.1880	21 5 28.3	9.633	15	9 54 55.52	2.1197	11 21 7.9	14.396
16	8 14 0.97	2.1860	20 55 46.8	9.749	16	9 57 2.69	2.1192	11 6 41.8	14.473
17	8 16 12.07	2.1841	20 45 58.4	9.865	17	9 59 9.83	2.1188	10 52 11.1	14.550
18	8 18 23.06	2.1822	20 36 3.0	9.981	18	10 1 16.95	2.1185	10 37 35.8	14.623
19	8 20 33.93	2.1802	20 26 0.6	10.097	19	10 3 24.05	2.1182	10 22 56.1	14.698
20	8 22 44.69	2.1783	20 15 51.3	10.212	20	10 5 31.14	2.1181	10 8 12.0	14.771
21	8 24 55.33	2.1764	20 5 35.2	10.325	21	10 7 38.22	2.1179	9 53 23.6	14.842
22	8 27 5.86	2.1746	19 55 12.3	10.438	22	10 9 45.29	2.1178	9 38 31.0	14.912
23	8 29 16.28	2.1727	19 44 42.6	10.551	23	10 11 52.36	2.1178	9 23 34.1	14.982
24	8 31 26.58	2.1708	N. 19 34 6.1	10.663	24	10 13 59.43	2.1178	N. 9 8 33.1	15.051

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 13.					THURSDAY 15.				
0	10 13 59.43	2.1178	N. 9 8 33.1	15.051	0	11 57 3.04	2.2035	S. 3 47 17.1	16.703
1	10 16 6.50	2.1180	8 53 28.0	15.118	1	11 59 15.48	2.2028	4 3 59.2	16.698
2	10 18 13.59	2.1182	8 38 19.0	15.183	2	12 1 28.15	2.2030	4 20 40.9	16.691
3	10 20 20.69	2.1184	8 23 6.1	15.248	3	12 3 41.04	2.2168	4 37 22.1	16.682
4	10 22 27.80	2.1188	8 7 49.3	15.311	4	12 5 54.17	2.2209	4 54 2.8	16.672
5	10 24 34.94	2.1192	7 52 28.8	15.373	5	12 8 7.55	2.2250	5 10 42.7	16.658
6	10 26 42.10	2.1196	7 37 4.6	15.434	6	12 10 21.17	2.2291	5 27 21.8	16.644
7	10 28 49.29	2.1201	7 21 36.7	15.494	7	12 12 35.04	2.2332	5 44 0.0	16.627
8	10 30 56.51	2.1207	7 6 5.3	15.552	8	12 14 49.16	2.2375	6 0 37.1	16.609
9	10 33 3.77	2.1213	6 50 30.5	15.609	9	12 17 3.54	2.2418	6 17 13.1	16.589
10	10 35 11.07	2.1220	6 34 52.3	15.665	10	12 19 18.18	2.2462	6 33 47.8	16.566
11	10 37 18.41	2.1228	6 19 10.7	15.720	11	12 21 33.09	2.2508	6 50 21.0	16.541
12	10 39 25.80	2.1237	6 3 25.9	15.773	12	12 23 48.28	2.2554	7 6 52.7	16.513
13	10 41 33.25	2.1247	5 47 37.9	15.826	13	12 26 3.74	2.2600	7 23 22.8	16.487
14	10 43 40.76	2.1256	5 31 46.8	15.876	14	12 28 19.48	2.2648	7 39 51.1	16.456
15	10 45 48.32	2.1266	5 15 52.8	15.924	15	12 30 35.51	2.2696	7 56 17.5	16.423
16	10 47 55.95	2.1278	4 59 55.9	15.972	16	12 32 51.83	2.2744	8 12 41.9	16.389
17	10 50 3.66	2.1291	4 43 56.1	16.020	17	12 35 8.44	2.2793	8 29 4.2	16.353
18	10 52 11.44	2.1303	4 27 53.5	16.065	18	12 37 25.35	2.2843	8 45 24.3	16.315
19	10 54 19.30	2.1317	4 11 48.3	16.108	19	12 39 42.56	2.2894	9 1 42.0	16.274
20	10 56 27.25	2.1332	3 55 40.5	16.151	20	12 42 0.08	2.2945	9 17 57.2	16.231
21	10 58 35.29	2.1347	3 39 30.2	16.192	21	12 44 17.90	2.2997	9 34 9.7	16.186
22	11 0 43.42	2.1363	3 23 17.5	16.232	22	12 46 36.04	2.3050	9 50 19.5	16.138
23	11 2 51.65	2.1380	N. 3 7 2.4	16.270	23	12 48 54.50	2.3103	S. 10 6 26.3	16.088
WEDNESDAY 14.					FRIDAY 16.				
0	11 4 59.98	2.1397	N. 2 50 45.1	16.306	0	12 51 13.28	2.3157	S. 10 22 30.1	16.037
1	11 7 8.42	2.1416	2 34 25.7	16.341	1	12 53 32.38	2.3211	10 38 30.8	15.984
2	11 9 16.97	2.1435	2 18 4.2	16.375	2	12 55 51.81	2.3267	10 54 28.2	15.928
3	11 11 25.64	2.1455	2 1 40.7	16.407	3	12 58 11.58	2.3323	11 10 22.2	15.870
4	11 13 34.43	2.1476	1 45 15.3	16.437	4	13 0 31.68	2.3379	11 26 12.6	15.810
5	11 15 43.35	2.1497	1 28 48.2	16.466	5	13 2 52.12	2.3436	11 41 59.4	15.748
6	11 17 52.39	2.1518	1 12 19.4	16.493	6	13 5 12.91	2.3493	11 57 42.4	15.683
7	11 20 1.57	2.1542	0 55 49.0	16.520	7	13 7 34.04	2.3551	12 13 21.4	15.617
8	11 22 10.89	2.1566	0 39 17.0	16.544	8	13 9 55.52	2.3609	12 28 56.4	15.548
9	11 24 20.36	2.1591	0 22 43.7	16.566	9	13 12 17.35	2.3668	12 44 27.2	15.477
10	11 26 29.98	2.1616	N. 0 6 9.1	16.587	10	13 14 39.54	2.3727	12 59 53.6	15.403
11	11 28 39.75	2.1642	S. 0 10 26.8	16.607	11	13 17 2.08	2.3787	13 15 15.5	15.327
12	11 30 49.68	2.1668	0 27 3.8	16.625	12	13 19 24.98	2.3847	13 30 32.9	15.250
13	11 32 59.77	2.1697	0 43 41.8	16.641	13	13 21 48.24	2.3908	13 45 45.5	15.170
14	11 35 10.04	2.1726	1 0 20.7	16.655	14	13 24 11.87	2.3969	14 0 53.3	15.088
15	11 37 20.48	2.1755	1 17 0.4	16.667	15	13 26 35.87	2.4031	14 15 56.1	15.003
16	11 39 31.10	2.1785	1 33 40.8	16.678	16	13 29 0.24	2.4092	14 30 53.7	14.916
17	11 41 41.90	2.1816	1 50 21.8	16.687	17	13 31 24.98	2.4154	14 45 46.0	14.828
18	11 43 52.89	2.1847	2 7 3.3	16.695	18	13 33 50.09	2.4217	15 0 33.0	14.737
19	11 46 4.07	2.1880	2 23 45.2	16.701	19	13 36 15.58	2.4280	15 15 14.4	14.643
20	11 48 15.45	2.1913	2 40 27.4	16.705	20	13 38 41.45	2.4342	15 29 50.1	14.548
21	11 50 27.03	2.1947	2 57 9.8	16.707	21	13 41 7.69	2.4405	15 44 20.1	14.450
22	11 52 38.82	2.1982	3 13 52.3	16.708	22	13 43 34.31	2.4468	15 58 44.1	14.349
23	11 54 50.82	2.2018	3 30 34.8	16.707	23	13 46 1.31	2.4532	16 13 2.0	14.247
24	11 57 3.04	2.2055	S. 3 47 17.1	16.703	24	13 48 28.70	2.4597	S. 16 27 13.7	14.142

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 17.					MONDAY 19.				
0	13 48 28.70	2.4597	S. 16 27 13.7	14.148	0	15 53 23.14	2.7179	S. 25 6 2.0	6.777
1	13 50 56.47	2.4660	16 41 19.1	14.096	1	15 56 6.30	2.7208	25 12 42.9	6.985
2	13 53 24.62	2.4723	16 55 18.0	13.927	2	15 58 49.64	2.7237	25 19 12.2	6.992
3	13 55 53.15	2.4787	17 9 10.3	13.815	3	16 1 33.14	2.7265	25 25 30.0	6.799
4	13 58 22.07	2.4852	17 22 55.8	13.702	4	16 4 16.79	2.7287	25 31 36.1	6.004
5	14 0 51.37	2.4916	17 36 34.5	13.587	5	16 7 0.58	2.7309	25 37 30.5	5.809
6	14 3 21.06	2.4980	17 50 6.2	13.468	6	16 9 44.50	2.7330	25 43 13.2	5.613
7	14 5 51.13	2.5043	18 3 30.7	13.348	7	16 12 28.54	2.7349	25 48 44.1	5.417
8	14 8 21.48	2.5107	18 16 47.9	13.226	8	16 15 12.69	2.7367	25 54 3.2	5.220
9	14 10 52.52	2.5172	18 29 57.8	13.102	9	16 17 56.94	2.7383	25 59 10.5	5.022
10	14 13 23.64	2.5235	18 43 0.1	12.975	10	16 20 41.28	2.7397	26 4 5.9	4.823
11	14 15 55.24	2.5297	18 55 54.8	12.847	11	16 23 25.70	2.7409	26 8 49.3	4.624
12	14 18 27.21	2.5360	19 8 41.7	12.716	12	16 26 10.19	2.7420	26 13 20.8	4.425
13	14 20 59.56	2.5423	19 21 20.7	12.582	13	16 28 54.74	2.7428	26 17 40.3	4.226
14	14 23 32.29	2.5486	19 33 51.6	12.447	14	16 31 39.33	2.7435	26 21 47.9	4.027
15	14 26 5.40	2.5549	19 46 14.3	12.310	15	16 34 23.96	2.7440	26 25 43.5	3.826
16	14 28 38.88	2.5611	19 58 28.8	12.171	16	16 37 8.61	2.7443	26 29 27.0	3.625
17	14 31 12.73	2.5672	20 10 34.8	12.029	17	16 39 53.27	2.7444	26 32 58.5	3.425
18	14 33 46.95	2.5733	20 22 32.3	11.886	18	16 42 37.94	2.7444	26 36 18.0	3.224
19	14 36 21.53	2.5794	20 34 21.1	11.741	19	16 45 22.60	2.7442	26 39 25.4	3.023
20	14 38 56.48	2.5855	20 46 1.2	11.594	20	16 48 7.24	2.7437	26 42 20.7	2.822
21	14 41 31.79	2.5914	20 57 32.4	11.445	21	16 50 51.84	2.7430	26 45 4.0	2.621
22	14 44 7.45	2.5973	21 8 54.6	11.293	22	16 53 36.40	2.7422	26 47 35.2	2.420
23	14 46 43.46	2.6032	S. 21 20 7.6	11.140	23	16 56 20.90	2.7412	S. 26 49 54.4	2.220
SUNDAY 18.					TUESDAY 20.				
0	14 49 19.83	2.6090	S. 21 31 11.4	10.986	0	16 59 5.34	2.7400	S. 26 52 1.6	2.019
1	14 51 56.54	2.6147	21 42 5.9	10.829	1	17 1 49.70	2.7386	26 53 56.7	1.818
2	14 54 33.59	2.6202	21 52 50.9	10.669	2	17 4 33.97	2.7371	26 55 39.8	1.618
3	14 57 10.97	2.6257	22 3 26.2	10.508	3	17 7 18.15	2.7353	26 57 10.9	1.418
4	14 59 48.68	2.6312	22 13 51.8	10.346	4	17 10 2.21	2.7333	26 58 30.0	1.219
5	15 2 26.72	2.6367	22 24 7.7	10.182	5	17 12 46.15	2.7312	26 59 37.2	1.020
6	15 5 5.09	2.6421	22 34 13.7	10.016	6	17 15 29.96	2.7289	27 0 32.4	0.821
7	15 7 43.77	2.6472	22 44 9.6	9.848	7	17 18 13.62	2.7264	27 1 15.7	0.623
8	15 10 22.75	2.6523	22 53 55.5	9.680	8	17 20 57.13	2.7237	27 1 47.1	0.425
9	15 13 2.04	2.6573	23 3 31.2	9.509	9	17 23 40.47	2.7208	27 2 6.7	0.228
10	15 15 41.63	2.6622	23 12 56.6	9.337	10	17 26 23.63	2.7178	27 2 14.5	- 0.032
11	15 18 21.51	2.6670	23 22 11.6	9.166	11	17 29 6.61	2.7147	27 2 10.5	+ 0.164
12	15 21 1.67	2.6717	23 31 16.1	8.997	12	17 31 49.39	2.7113	27 1 54.8	0.359
13	15 23 42.11	2.6762	23 40 10.0	8.820	13	17 34 31.96	2.7077	27 1 27.4	0.553
14	15 26 22.82	2.6807	23 48 53.3	8.632	14	17 37 14.31	2.7039	27 0 48.4	0.747
15	15 29 3.80	2.6851	23 57 25.8	8.432	15	17 39 56.43	2.7000	26 59 57.8	0.940
16	15 31 45.03	2.6892	24 5 47.5	8.271	16	17 42 38.31	2.6959	26 58 55.6	1.132
17	15 34 26.51	2.6933	24 13 58.3	8.088	17	17 45 19.94	2.6917	26 57 42.0	1.322
18	15 37 8.23	2.6973	24 21 58.1	7.904	18	17 48 1.32	2.6874	26 56 17.0	1.512
19	15 39 50.18	2.7011	24 29 46.8	7.719	19	17 50 42.43	2.6828	26 54 40.6	1.701
20	15 42 32.36	2.7047	24 37 24.4	7.533	20	17 53 23.26	2.6781	26 52 52.9	1.888
21	15 45 14.75	2.7082	24 44 50.8	7.346	21	17 56 3.80	2.6732	26 50 54.0	2.074
22	15 47 57.35	2.7117	24 52 5.9	7.157	22	17 58 44.05	2.6682	26 48 44.0	2.260
23	15 50 40.15	2.7149	24 59 9.6	6.967	23	18 1 23.99	2.6630	26 46 22.8	2.445
24	15 53 23.14	2.7179	S. 25 6 2.0	6.777	24	18 4 3.61	2.6577	S. 26 43 50.6	2.627

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 21.					FRIDAY 23.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
1	18 4 3.61	2.6577	S. 26 43 50.6	2.627	1	20 3 37.69	2.3033	S. 21 34 20.2	9.547
2	18 6 42.91	2.6523	26 41 7.5	2.809	2	20 5 55.65	2.2953	21 24 38.2	9.752
3	18 9 21.88	2.6467	26 38 13.5	2.991	3	20 8 13.13	2.2873	21 14 49.9	9.856
4	18 12 0.51	2.6409	26 35 8.6	3.171	4	20 10 30.13	2.2794	21 4 55.5	9.958
5	18 14 38.79	2.6351	26 31 53.0	3.349	5	20 12 46.66	2.2715	20 54 55.0	10.059
6	18 17 16.72	2.6292	26 28 26.7	3.526	6	20 15 2.71	2.2635	20 44 48.4	10.159
7	18 19 54.29	2.6231	26 24 49.9	3.701	7	20 17 18.28	2.2556	20 34 35.9	10.257
8	18 22 31.49	2.6168	26 21 2.6	3.875	8	20 19 33.38	2.2478	20 24 17.6	10.352
9	18 25 8.31	2.6104	26 17 4.9	4.048	9	20 21 48.02	2.2401	20 13 53.6	10.446
10	18 27 44.74	2.6039	26 12 56.8	4.220	10	20 24 2.19	2.2323	20 3 24.1	10.539
11	18 30 20.78	2.5974	26 8 38.5	4.389	11	20 26 15.89	2.2245	19 52 49.0	10.631
12	18 32 56.43	2.5907	26 4 10.1	4.558	12	20 28 29.13	2.2168	19 42 8.4	10.721
13	18 35 31.67	2.5839	25 59 31.6	4.725	13	20 30 41.91	2.2092	19 31 22.5	10.808
14	18 38 6.50	2.5771	25 54 43.1	4.890	14	20 32 54.23	2.2016	19 20 31.4	10.895
15	18 40 40.92	2.5702	25 49 44.8	5.054	15	20 35 6.10	2.1941	19 9 35.1	10.981
16	18 43 14.92	2.5631	25 44 36.7	5.217	16	20 37 17.52	2.1866	18 58 33.7	11.065
17	18 45 48.49	2.5559	25 39 18.8	5.377	17	20 39 28.49	2.1792	18 47 27.3	11.147
18	18 48 21.63	2.5487	25 33 51.4	5.536	18	20 41 39.02	2.1717	18 36 16.1	11.227
19	18 50 54.34	2.5415	25 28 14.5	5.693	19	20 43 49.10	2.1643	18 25 0.1	11.306
20	18 53 26.61	2.5341	25 22 28.2	5.850	20	20 45 58.74	2.1571	18 13 39.4	11.384
21	18 55 58.43	2.5266	25 16 32.5	6.005	21	20 48 7.95	2.1499	18 2 14.0	11.461
22	18 58 29.80	2.5191	25 10 27.6	6.157	22	20 50 16.73	2.1427	17 50 44.1	11.535
23	19 1 0.72	2.5115	25 4 13.6	6.308	23	20 52 25.08	2.1357	17 39 9.8	11.608
24	19 3 31.18	2.5038	S. 24 57 50.6	6.457	24	20 54 33.01	2.1287	S. 17 27 31.1	11.681
THURSDAY 22.					SATURDAY 24.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
1	19 6 1.18	2.4962	S. 24 51 18.7	6.605	1	20 56 40.52	2.1217	S. 17 15 48.1	11.752
2	19 8 30.72	2.4884	24 44 38.0	6.752	2	20 58 47.61	2.1147	17 4 0.9	11.821
3	19 10 59.79	2.4806	24 37 48.5	6.897	3	21 0 54.29	2.1079	16 52 9.6	11.888
4	19 13 28.39	2.4727	24 30 50.4	7.039	4	21 3 0.56	2.1012	16 40 14.3	11.955
5	19 15 56.52	2.4648	24 23 43.8	7.180	5	21 5 6.43	2.0944	16 28 15.0	12.021
6	19 18 24.17	2.4569	24 16 28.8	7.319	6	21 7 11.89	2.0877	16 16 11.8	12.084
7	19 20 51.35	2.4490	24 9 5.5	7.457	7	21 9 16.95	2.0811	16 4 4.9	12.146
8	19 23 18.05	2.4410	24 1 33.9	7.593	8	21 11 21.62	2.0746	15 51 54.3	12.207
9	19 25 44.27	2.4329	23 53 54.3	7.727	9	21 13 25.91	2.0682	15 39 40.0	12.267
10	19 28 10.00	2.4248	23 46 6.7	7.859	10	21 15 29.81	2.0618	15 27 22.2	12.326
11	19 30 35.25	2.4168	23 38 11.2	7.991	11	21 17 33.33	2.0556	15 15 0.9	12.383
12	19 33 0.02	2.4087	23 30 7.8	8.121	12	21 19 36.48	2.0494	15 2 36.2	12.440
13	19 35 24.30	2.4006	23 21 56.7	8.248	13	21 21 39.26	2.0433	14 50 8.1	12.495
14	19 37 48.09	2.3925	23 13 38.0	8.374	14	21 23 41.67	2.0372	14 37 36.8	12.548
15	19 40 11.40	2.3844	23 5 11.8	8.497	15	21 25 43.72	2.0311	14 25 2.3	12.600
16	19 42 34.22	2.3763	22 56 38.3	8.619	16	21 27 45.40	2.0251	14 12 24.8	12.651
17	19 44 56.55	2.3682	22 47 57.5	8.740	17	21 29 46.73	2.0193	13 59 44.2	12.702
18	19 47 18.40	2.3601	22 39 9.5	8.860	18	21 31 47.72	2.0136	13 47 0.6	12.750
19	19 49 39.76	2.3519	22 30 14.3	8.978	19	21 33 48.36	2.0079	13 34 14.2	12.797
20	19 52 0.63	2.3438	22 21 12.2	9.093	20	21 35 48.66	2.0023	13 21 25.0	12.843
21	19 54 21.01	2.3357	22 12 3.2	9.207	21	21 37 48.63	1.9967	13 8 33.0	12.889
22	19 56 40.91	2.3276	22 2 47.4	9.319	22	21 39 48.26	1.9911	12 55 38.3	12.932
23	19 59 0.32	2.3195	21 53 24.9	9.430	23	21 41 47.56	1.9858	12 42 41.1	12.975
24	20 1 19.25	2.3114	21 43 55.8	9.539	24	21 43 46.55	1.9805	12 29 41.3	13.017
	20 3 37.69	2.3033	S. 21 34 20.2	9.647		21 45 45.22	1.9752	S. 12 16 39.0	13.058

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 25.					TUESDAY 27.				
0	21 45 45.22	1.9752	S. 12 16 39.0	13.058	0	23 16 1.22	1.8139	S. 1 22 6.0	13.866
1	21 47 43.58	1.9701	12 3 34.3	13.097	1	23 17 50.13	1.8145	1 8 14.2	13.861
2	21 49 41.63	1.9649	11 50 27.3	13.136	2	23 19 38.96	1.8132	0 54 22.7	13.857
3	21 51 39.37	1.9599	11 37 18.0	13.173	3	23 21 27.71	1.8118	0 40 31.4	13.852
4	21 53 36.82	1.9550	11 24 6.5	13.210	4	23 23 16.38	1.8106	0 26 40.5	13.845
5	21 55 33.97	1.9501	11 10 52.8	13.245	5	23 25 4.98	1.8094	S. 0 12 50.0	13.837
6	21 57 30.83	1.9453	10 57 37.1	13.279	6	23 26 53.51	1.8083	N. 0 1 0.0	13.829
7	21 59 27.41	1.9407	10 44 19.4	13.312	7	23 28 41.98	1.8073	0 14 49.5	13.820
8	22 1 23.71	1.9361	10 30 59.7	13.344	8	23 30 30.39	1.8064	0 28 38.4	13.811
9	22 3 19.74	1.9316	10 17 38.1	13.375	9	23 32 18.75	1.8056	0 42 26.8	13.802
10	22 5 15.50	1.9271	10 4 14.7	13.405	10	23 34 7.06	1.8048	0 56 14.6	13.790
11	22 7 10.99	1.9227	9 50 49.5	13.434	11	23 35 55.32	1.8040	1 10 1.6	13.778
12	22 9 6.22	1.9184	9 37 22.6	13.462	12	23 37 43.54	1.8034	1 23 47.9	13.765
13	22 11 1.20	1.9142	9 23 54.1	13.488	13	23 39 31.73	1.8028	1 37 33.4	13.752
14	22 12 55.93	1.9101	9 10 24.0	13.515	14	23 41 19.88	1.8022	1 51 18.1	13.738
15	22 14 50.41	1.9060	8 56 52.3	13.541	15	23 43 8.00	1.8018	2 5 2.0	13.723
16	22 16 44.65	1.9021	8 43 19.1	13.565	16	23 44 56.10	1.8015	2 18 44.9	13.708
17	22 18 38.66	1.8982	8 29 44.5	13.587	17	23 46 44.18	1.8012	2 32 26.9	13.692
18	22 20 32.43	1.8944	8 16 8.6	13.609	18	23 48 32.24	1.8009	2 46 7.9	13.675
19	22 22 25.98	1.8907	8 2 31.4	13.631	19	23 50 20.29	1.8008	2 59 47.9	13.657
20	22 24 19.31	1.8869	7 48 52.9	13.652	20	23 52 8.34	1.8007	3 13 26.7	13.638
21	22 26 12.41	1.8832	7 35 13.2	13.671	21	23 53 56.38	1.8007	3 27 4.4	13.618
22	22 28 5.30	1.8798	7 21 32.4	13.689	22	23 55 44.42	1.8007	3 40 40.9	13.598
23	22 29 57.99	1.8764	S. 7 7 50.5	13.707	23	23 57 32.46	1.8008	N. 3 54 16.2	13.577
MONDAY 26.					WEDNESDAY 28.				
0	22 31 50.47	1.8731	S. 6 54 7.6	13.723	0	23 59 20.51	1.8009	N. 4 7 50.2	13.556
1	22 33 42.76	1.8698	6 40 23.8	13.739	1	0 1 8.57	1.8012	4 21 22.9	13.534
2	22 35 34.85	1.8666	6 26 39.0	13.754	2	0 2 56.65	1.8015	4 34 54.2	13.511
3	22 37 26.75	1.8634	6 12 53.3	13.768	3	0 4 44.75	1.8018	4 48 24.2	13.488
4	22 39 18.46	1.8604	5 59 6.8	13.781	4	0 6 32.87	1.8022	5 1 52.8	13.463
5	22 41 10.00	1.8573	5 45 19.6	13.793	5	0 8 21.02	1.8028	5 15 19.8	13.438
6	22 43 1.36	1.8546	5 31 31.7	13.804	6	0 10 9.21	1.8034	5 28 45.3	13.412
7	22 44 52.55	1.8518	5 17 43.1	13.815	7	0 11 57.43	1.8040	5 42 9.2	13.385
8	22 46 43.58	1.8491	5 3 53.9	13.824	8	0 13 45.69	1.8047	5 55 31.5	13.358
9	22 48 34.44	1.8464	4 50 4.2	13.833	9	0 15 33.99	1.8054	6 8 52.2	13.330
10	22 50 25.14	1.8438	4 36 14.0	13.841	10	0 17 22.33	1.8062	6 22 11.1	13.300
11	22 52 15.70	1.8414	4 22 23.3	13.848	11	0 19 10.73	1.8071	6 35 28.2	13.271
12	22 54 6.11	1.8390	4 8 32.2	13.854	12	0 20 59.18	1.8080	6 48 43.6	13.241
13	22 55 56.38	1.8367	3 54 40.8	13.859	13	0 22 47.69	1.8090	7 1 57.1	13.209
14	22 57 46.51	1.8343	3 40 49.1	13.864	14	0 24 36.26	1.8100	7 15 8.7	13.177
15	22 59 36.50	1.8321	3 26 57.1	13.868	15	0 26 24.89	1.8111	7 28 18.4	13.145
16	23 1 26.36	1.8301	3 13 4.9	13.872	16	0 28 13.59	1.8123	7 41 26.1	13.112
17	23 3 16.11	1.8282	2 59 12.5	13.875	17	0 30 2.37	1.8136	7 54 31.8	13.077
18	23 5 5.74	1.8262	2 45 20.1	13.874	18	0 31 51.23	1.8150	8 7 35.4	13.042
19	23 6 55.25	1.8243	2 31 27.6	13.875	19	0 33 40.17	1.8163	8 20 36.9	13.007
20	23 8 44.65	1.8221	2 17 35.1	13.874	20	0 35 29.19	1.8177	8 33 36.2	12.971
21	23 10 33.94	1.8207	2 3 42.7	13.873	21	0 37 18.29	1.8191	8 46 33.4	12.934
22	23 12 23.13	1.8190	1 49 50.4	13.872	22	0 39 7.48	1.8206	8 59 28.3	12.896
23	23 14 12.22	1.8174	1 35 58.1	13.870	23	0 40 56.77	1.8222	9 12 20.9	12.857
24	23 16 1.22	1.8159	S. 1 22 6.0	13.866	24	0 42 46.15	1.8238	N. 9 25 11.1	12.817

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 29.					SATURDAY, MAY 1.				
0	h m s		° ' "		0	h m s		° ' "	
0	42 46.15	1.8238	N. 9 25 11.1	12.817	0	2 13 9.78	1.9587	N. 18 40 29.5	10.077
1	44 35.63	1.8256	9 37 58.9	12.777	PHASES OF THE MOON.				
2	46 25.22	1.8273	9 50 44.4	12.737					
3	48 14.91	1.8291	10 3 27.4	12.695					
4	50 4.71	1.8310	10 16 7.8	12.652					
5	51 54.63	1.8330	10 28 45.7	12.610					
6	53 44.67	1.8350	10 41 21.0	12.567					
7	55 34.83	1.8370	10 53 53.7	12.522					
8	57 25.11	1.8390	11 6 23.6	12.476					
9	59 15.51	1.8412	11 18 50.8	12.430					
10	1 1 6.05	1.8434	11 31 15.2	12.383					
11	1 2 56.72	1.8456	11 43 36.7	12.335	☉ New Moon April 1 16 23.9 ☾ First Quarter 9 20 26.8 ○ Full Moon 16 18 25.4 ☾ Last Quarter 23 9 47.9				
12	1 4 47.52	1.8478	11 55 55.4	12.287					
13	1 6 38.46	1.8502	12 8 11.2	12.238					
14	1 8 29.55	1.8527	12 20 24.0	12.188					
15	1 10 20.78	1.8551	12 32 33.7	12.137					
16	1 12 12.16	1.8576	12 44 40.4	12.085					
17	1 14 3.69	1.8601	12 56 43.9	12.033					
18	1 15 55.37	1.8627	13 8 44.3	11.980					
19	1 17 47.21	1.8653	13 20 41.5	11.926					
20	1 19 39.21	1.8680	13 32 35.4	11.872						☾ Apogee . . . . . April 4 14.4 ☾ Perigee . . . . . 17 8.7
21	1 21 31.37	1.8707	13 44 26.1	11.817					
22	1 23 23.70	1.8735	13 56 13.4	11.760					
23	1 25 16.19	1.8763	N. 14 7 57.3	11.702					
FRIDAY 30.									
0	1 27 8.85	1.8791	N. 14 19 37.7	11.644					
1	1 29 1.68	1.8820	14 31 14.6	11.586					
2	1 30 54.69	1.8850	14 42 48.0	11.527					
3	1 32 47.88	1.8880	14 54 17.9	11.467					
4	1 34 41.25	1.8910	15 5 44.1	11.406					
5	1 36 34.80	1.8940	15 17 6.6	11.344					
6	1 38 28.53	1.8971	15 28 25.3	11.281					
7	1 40 22.45	1.9003	15 39 40.3	11.217					
8	1 42 16.56	1.9035	15 50 51.4	11.153					
9	1 44 10.87	1.9067	16 1 58.7	11.088					
10	1 46 5.37	1.9099	16 13 2.0	11.022					
11	1 48 0.06	1.9132	16 24 1.3	10.956					
12	1 49 54.95	1.9165	16 34 56.7	10.889					
13	1 51 50.04	1.9199	16 45 48.0	10.820					
14	1 53 45.34	1.9233	16 56 35.1	10.751					
15	1 55 40.84	1.9267	17 7 18.1	10.682					
16	1 57 36.54	1.9301	17 17 56.9	10.611					
17	1 59 32.45	1.9336	17 28 31.4	10.539					
18	2 1 28.57	1.9371	17 39 1.6	10.466					
19	2 3 24.90	1.9406	17 49 27.4	10.393					
20	2 5 21.44	1.9442	17 59 48.8	10.320					
21	2 7 18.20	1.9478	18 10 5.8	10.246					
22	2 9 15.18	1.9514	18 20 18.3	10.170					
23	2 11 12.37	1.9550	18 30 26.2	10.094					
24	2 13 9.78	1.9587	N. 18 40 29.5	10.017					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
3	SUN W.	15 16 53	3594	16 35 34	3576	17 54 35	3561	19 13 52	3547
	MARS E.	67 23 33	3233	65 58 3	3237	64 32 38	3241	63 7 17	3244
	Pollux E.	82 48 35	3064	81 19 41	3068	79 50 52	3071	78 22 7	3075
4	SUN W.	25 53 4	3514	27 13 13	3510	28 33 26	3507	29 53 42	3506
	MARS E.	56 1 30	3259	54 36 30	3261	53 11 33	3263	51 46 38	3265
	Pollux E.	70 59 22	3089	69 30 59	3091	68 2 39	3094	66 34 22	3096
	Regulus E.	107 53 38	3074	106 24 57	3076	104 56 18	3078	103 27 41	3079
5	SUN W.	36 35 39	3495	37 56 9	3492	39 16 42	3489	40 37 18	3488
	MARS E.	44 42 27	3270	43 17 40	3269	41 52 52	3269	40 28 4	3268
	Pollux E.	59 13 25	3102	57 45 18	3102	56 17 11	3103	54 49 5	3103
	Regulus E.	96 4 58	3083	94 36 28	3082	93 7 57	3082	91 39 26	3082
	JUPITER E.	98 28 1	3064	96 59 7	3063	95 30 12	3063	94 1 17	3062
6	SUN W.	47 20 59	3472	48 41 54	3469	50 2 53	3464	51 23 57	3459
	VENUS W.	17 13 41	3100	18 41 51	3094	20 10 8	3087	21 38 33	3081
	MARS E.	33 23 46	3260	31 58 48	3258	30 33 47	3254	29 8 42	3252
	Pollux E.	47 28 32	3101	46 0 23	3099	44 32 12	3098	43 4 0	3096
	Regulus E.	84 16 29	3073	82 47 46	3070	81 19 0	3068	79 50 11	3064
	JUPITER E.	86 36 23	3055	85 7 18	3052	83 38 9	3049	82 8 57	3046
7	SUN W.	58 10 43	3431	59 32 24	3425	60 54 12	3418	62 16 8	3411
	VENUS W.	29 2 46	3044	30 32 4	3036	32 1 32	3027	33 31 11	3019
	Pollux E.	35 42 27	3087	34 14 1	3085	32 45 33	3083	31 17 3	3082
	Regulus E.	72 24 52	3042	70 55 31	3035	69 26 2	3030	67 56 26	3023
	JUPITER E.	74 41 48	3024	73 12 5	3019	71 42 16	3013	70 12 19	3007
8	SUN W.	69 8 5	3366	70 31 0	3357	71 54 6	3346	73 17 24	3335
	VENUS W.	41 2 14	2969	42 33 5	2959	44 4 9	2947	45 35 28	2936
	Regulus E.	60 26 16	2985	58 55 44	2976	57 25 1	2966	55 54 6	2957
	JUPITER E.	62 40 29	2969	61 9 38	2961	59 38 36	2952	58 7 23	2942
9	SUN W.	80 17 15	3275	81 41 56	3260	83 6 54	3247	84 32 8	3232
	VENUS W.	53 15 55	2871	54 48 51	2856	56 22 6	2842	57 55 39	2828
	Aldebaran W.	32 49 0	3125	34 16 39	3096	35 44 54	3068	37 13 43	3041
	Regulus E.	48 16 17	2902	46 44 1	2890	45 11 29	2877	43 38 41	2865
	JUPITER E.	50 28 6	2890	48 55 34	2877	47 22 46	2866	45 49 43	2852
	Spica E.	102 19 40	2903	100 47 25	2891	99 14 54	2878	97 42 7	2865
10	SUN W.	91 42 42	3155	93 9 45	3138	94 37 8	3122	96 4 51	3104
	VENUS W.	65 48 23	2747	67 24 0	2731	68 59 59	2713	70 36 21	2695
	Aldebaran W.	44 45 38	2922	46 17 29	2899	47 49 49	2877	49 22 37	2856
	Regulus E.	35 50 24	2795	34 15 50	2780	32 40 56	2766	31 5 43	2750
	JUPITER E.	38 0 17	2786	36 25 31	2772	34 50 27	2758	33 15 4	2744
	Spica E.	89 53 46	2793	88 19 9	2778	86 44 12	2762	85 8 54	2746
11	SUN W.	103 28 54	3014	104 58 50	2994	106 29 10	2975	107 59 54	2956
	VENUS W.	78 44 15	2603	80 23 6	2584	82 2 23	2565	83 42 6	2545
	Aldebaran W.	57 13 31	2750	58 49 5	2729	60 25 6	2708	62 1 35	2688
	Spica E.	77 6 59	2661	75 29 27	2644	73 51 32	2626	72 13 13	2608
	SATURN E.	114 31 28	2680	112 54 21	2660	111 16 48	2642	109 38 50	2623

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
3	SUN	W.	20 33 24	3537	21 53 7	3529	23 12 59	3522	24 32 59	3517
	MARS	E.	61 42 0	3247	60 16 47	3251	58 51 38	3253	57 26 32	3257
	Pollux	E.	76 53 27	3078	75 24 50	3081	73 56 17	3084	72 27 48	3087
4	SUN	W.	31 14 0	3503	32 34 21	3500	33 54 45	3498	35 15 11	3497
	MARS	E.	50 21 45	3266	48 56 54	3267	47 32 4	3268	46 7 15	3269
	Pollux	E.	65 6 7	3097	63 37 54	3099	62 9 43	3100	60 41 33	3101
	Regulus	E.	101 59 6	3080	100 30 32	3082	99 2 0	3082	97 33 29	3082
5	SUN	W.	41 57 56	3485	43 18 37	3482	44 39 21	3480	46 0 8	3476
	MARS	E.	39 3 15	3267	37 38 25	3266	36 13 34	3265	34 48 41	3263
	Pollux	E.	53 20 59	3103	51 52 53	3103	50 24 47	3102	48 56 40	3101
	Regulus	E.	90 10 54	3081	88 42 21	3079	87 13 46	3078	85 45 9	3075
	JUPITER	E.	92 32 21	3061	91 3 24	3060	89 34 26	3059	88 5 26	3056
6	SUN	W.	52 45 7	3454	54 6 22	3449	55 27 43	3444	56 49 10	3438
	VENUS	W.	23 7 6	3073	24 35 48	3067	26 4 38	3060	27 33 37	3052
	MARS	E.	27 43 34	3247	26 18 21	3244	24 53 4	3239	23 27 41	3235
	Pollux	E.	41 35 46	3095	40 7 30	3092	38 39 11	3091	37 10 50	3089
	Regulus	E.	78 21 17	3060	76 52 19	3056	75 23 16	3052	73 54 7	3047
	JUPITER	E.	80 39 41	3042	79 10 20	3039	77 40 55	3034	76 11 24	3030
7	SUN	W.	63 38 12	3403	65 0 25	3394	66 22 48	3386	67 45 21	3376
	VENUS	W.	35 1 0	3009	36 31 1	3001	38 1 13	2991	39 31 37	2981
	Pollux	E.	29 48 31	3081	28 19 58	3080	26 51 24	3080	25 22 50	3082
	Regulus	E.	66 26 42	3017	64 56 50	3009	63 26 48	3001	61 56 37	2993
	JUPITER	E.	68 42 15	3000	67 12 2	2993	65 41 41	2985	64 11 10	2977
8	SUN	W.	74 40 55	3324	76 4 39	3312	77 28 37	3300	78 52 49	3288
	VENUS	W.	47 7 1	2924	48 38 50	2911	50 10 55	2898	51 43 16	2884
	Regulus	E.	54 22 59	2946	52 51 39	2936	51 20 6	2925	49 48 19	2913
	JUPITER	E.	56 35 57	2932	55 4 19	2922	53 32 28	2912	52 0 24	2901
9	SUN	W.	85 57 39	3218	87 23 27	3202	88 49 34	3187	90 15 59	3172
	VENUS	W.	59 29 31	2812	61 3 43	2797	62 38 15	2781	64 13 8	2764
	Aldebaran	W.	38 43 5	3016	40 12 58	2991	41 43 22	2968	43 14 15	2944
	Regulus	E.	42 5 37	2852	40 32 16	2838	38 58 37	2824	37 24 40	2809
	JUPITER	E.	44 16 23	2840	42 42 47	2828	41 8 55	2814	39 34 45	2800
	Spica	E.	96 9 3	2852	94 35 42	2837	93 2 2	2823	91 28 4	2808
10	SUN	W.	97 32 56	3087	99 1 22	3069	100 30 10	3050	101 59 21	3032
	VENUS	W.	72 13 7	2678	73 50 17	2660	75 27 51	2641	77 5 50	2622
	Aldebaran	W.	50 55 52	2835	52 29 35	2813	54 3 46	2792	55 38 25	2771
	Regulus	E.	29 30 9	2735	27 54 15	2719	26 18 0	2703	24 41 24	2688
	JUPITER	E.	31 39 23	2730	30 3 23	2715	28 27 3	2701	26 50 24	2686
	Spica	E.	83 33 15	2730	81 57 15	2713	80 20 52	2696	78 44 7	2679
11	SUN	W.	109 31 2	2936	111 2 35	2917	112 34 32	2898	114 6 54	2877
	VENUS	W.	85 22 17	2525	87 2 55	2505	88 44 1	2485	90 25 35	2465
	Aldebaran	W.	63 38 31	2666	65 15 56	2646	66 53 48	2625	68 32 9	2605
	Spica	E.	70 34 29	2590	68 55 20	2572	67 15 46	2553	65 35 46	2534
	SATURN	E.	108 0 26	2604	106 21 37	2585	104 42 21	2566	103 2 39	2547

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
12	SUN W.	115 39 42	2858	117 12 55	2838	118 46 34	2818	120 20 39	2798
	Aldebaran W.	70 10 57	2584	71 50 14	2564	73 29 58	2543	75 10 11	2524
	MARS W.	38 3 20	2679	39 40 28	2660	41 18 2	2640	42 56 3	2620
	Pollux W.	27 35 27	2580	29 14 49	2553	30 54 48	2528	32 35 22	2504
	Spica E.	63 55 20	2516	62 14 29	2497	60 33 11	2478	58 51 27	2459
	SATURN E.	101 22 31	2527	99 41 56	2508	98 0 54	2489	96 19 25	2470
	Antares E.	109 43 56	2510	108 2 56	2490	106 21 29	2472	104 39 36	2453
13	Aldebaran W.	83 38 11	2425	85 21 10	2406	87 4 36	2387	88 48 29	2368
	MARS W.	51 12 53	2522	52 53 36	2502	54 34 46	2483	56 16 23	2464
	Pollux W.	41 6 18	2393	42 50 3	2372	44 34 18	2352	46 19 2	2331
	Spica E.	50 16 8	2366	48 31 45	2348	46 46 55	2330	45 1 39	2312
	SATURN E.	87 45 14	2375	86 1 3	2356	84 16 25	2338	82 31 21	2320
	Antares E.	96 3 25	2357	94 18 49	2339	92 33 47	2321	90 48 18	2302
14	MARS W.	64 51 4	2373	66 35 18	2356	68 19 56	2339	70 4 59	2323
	Pollux W.	55 9 53	2237	56 57 25	2219	58 45 24	2202	60 33 48	2186
	Regulus W.	18 7 28	2235	19 55 3	2215	21 43 8	2196	23 31 41	2179
	SATURN E.	73 39 32	2235	71 51 56	2218	70 3 56	2203	68 15 33	2188
	Antares E.	81 54 14	2214	80 6 7	2198	78 17 36	2181	76 28 40	2166
15	MARS W.	78 55 56	2248	80 43 12	2235	82 30 47	2223	84 18 41	2210
	Pollux W.	69 41 45	2111	71 32 28	2093	73 23 30	2086	75 14 51	2073
	Regulus W.	32 40 45	2101	34 31 43	2087	36 23 2	2075	38 14 40	2062
	JUPITER W.	30 50 15	2103	32 41 9	2088	34 32 26	2075	36 24 4	2062
	SATURN E.	59 8 20	2124	57 17 57	2113	55 27 17	2102	53 36 21	2094
	Antares E.	67 18 16	2094	65 27 7	2081	63 35 38	2068	61 43 50	2057
16	MARS W.	93 22 19	2161	95 11 45	2153	97 1 23	2147	98 51 11	2141
	Pollux W.	84 35 51	2025	86 28 46	2017	88 21 53	2011	90 15 10	2005
	Regulus W.	47 37 10	2013	49 30 24	2006	51 23 49	1998	53 17 26	1993
	JUPITER W.	45 46 43	2010	47 40 1	2003	49 33 31	1996	51 27 12	1989
	Antares E.	52 20 43	2009	50 27 23	2001	48 33 51	1994	46 40 8	1989
	α Aquilæ E.	104 50 58	2689	103 14 4	2672	101 36 47	2656	99 59 8	2643
17	Pollux W.	99 43 32	1987	101 37 26	1986	103 31 22	1986	105 25 18	1987
	Regulus W.	62 47 29	1974	64 41 45	1972	66 36 3	1972	68 30 22	1972
	JUPITER W.	60 57 41	1970	62 52 2	1968	64 46 26	1968	66 40 51	1968
	Antares E.	37 9 41	1970	35 15 20	1970	33 20 58	1969	31 26 35	1970
	α Aquilæ E.	91 47 11	2605	90 8 23	2603	88 29 32	2604	86 50 42	2607
18	Regulus W.	78 1 24	1986	79 55 21	1990	81 49 11	1996	83 42 52	2002
	JUPITER W.	76 12 22	1982	78 6 25	1987	80 0 20	1993	81 54 6	1999
	Spica W.	24 3 32	2010	25 56 50	2011	27 50 7	2014	29 43 20	2018
	α Aquilæ E.	78 38 22	2651	77 0 36	2666	75 23 10	2683	73 46 7	2703
	Fomalhaut E.	103 3 8	2354	101 18 27	2355	99 33 47	2356	97 49 9	2359
19	Regulus W.	93 8 25	2044	95 0 50	2055	96 52 59	2066	98 44 51	2077
	JUPITER W.	91 20 3	2041	93 12 33	2052	95 4 46	2063	96 56 42	2074
	Spica W.	39 7 13	2053	40 59 24	2063	42 51 20	2073	44 43 0	2084
	α Aquilæ E.	65 48 33	2839	64 14 56	2876	62 42 6	2915	61 10 6	2958
	Fomalhaut E.	89 7 49	2396	87 24 9	2408	85 40 45	2421	83 57 40	2434

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
12	SUN W.	121 55 9	2778	123 30 6	2759	125 5 28	2739	126 41 16	2719
	Aldebaran W.	76 50 51	2503	78 32 0	2484	80 13 36	2464	81 55 40	2445
	MARS W.	44 34 31	2600	46 13 26	2580	47 52 48	2561	49 32 37	2541
	Pollux W.	34 16 29	2481	35 58 9	2458	37 40 21	2436	39 23 4	2415
	Spica E.	57 9 16	2441	55 26 39	2428	53 43 35	2403	52 0 5	2384
	SATURN E.	94 37 29	2450	92 55 6	2431	91 12 16	2412	89 28 59	2393
	Antares E.	102 57 16	2433	101 14 29	2415	99 31 15	2396	97 47 34	2376
13	Aldebaran W.	90 32 49	2350	92 17 35	2333	94 2 46	2315	95 48 23	2299
	MARS W.	57 58 27	2445	59 40 57	2426	61 23 54	2409	63 7 16	2391
	Pollux W.	48 4 16	2312	49 49 58	2292	51 36 9	2274	53 22 47	2255
	Spica E.	43 15 57	2295	41 29 50	2277	39 43 17	2261	37 56 20	2244
	SATURN E.	80 45 50	2302	78 59 53	2285	77 13 31	2268	75 26 44	2251
	Antares E.	89 2 22	2284	87 15 59	2266	85 29 10	2249	83 41 55	2231
14	MARS W.	71 50 25	2307	73 36 15	2291	75 22 27	2277	77 9 1	2262
	Pollux W.	62 22 36	2170	64 11 49	2155	66 1 25	2139	67 51 24	2125
	Regulus W.	25 20 40	2162	27 10 5	2145	28 59 55	2130	30 50 9	2115
	SATURN E.	66 26 47	2174	64 37 40	2161	62 48 13	2147	60 58 26	2135
	Antares E.	74 39 21	2150	72 49 38	2135	70 59 32	2121	69 9 5	2107
15	MARS W.	86 6 53	2199	87 55 22	2189	89 44 6	2179	91 33 5	2169
	Pollux W.	77 6 31	2062	78 58 28	2052	80 50 41	2042	82 43 9	2033
	Regulus W.	40 6 37	2051	41 58 52	2041	43 51 23	2031	45 44 9	2021
	JUPITER W.	38 16 1	2050	40 8 17	2039	42 0 50	2029	43 53 39	2019
	SATURN E.	51 45 12	2085	49 53 50	2078	48 2 17	2072	46 10 35	2067
	Antares E.	59 51 45	2046	57 59 23	2035	56 6 44	2026	54 13 50	2017
16	MARS W.	100 41 8	2136	102 31 13	2131	104 21 25	2127	106 11 43	2124
	Pollux W.	92 8 37	2000	94 2 12	1996	95 55 53	1992	97 49 40	1989
	Regulus W.	55 11 12	1987	57 5 7	1982	58 59 9	1979	60 53 17	1976
	JUPITER W.	53 21 3	1984	55 15 3	1979	57 9 10	1975	59 3 23	1972
	Antares E.	44 46 17	1984	42 52 18	1979	40 58 11	1975	39 3 58	1973
	♌ Aquilæ E.	98 21 11	2631	96 42 58	2621	95 4 31	2613	93 25 54	2609
17	Pollux W.	107 19 13	1988	109 13 6	1991	111 6 55	1994	113 0 39	1998
	Regulus W.	70 24 40	1974	72 18 56	1975	74 13 10	1977	76 7 20	1981
	JUPITER W.	68 35 15	1969	70 29 38	1972	72 23 57	1974	74 18 12	1977
	Antares E.	29 32 13	1970	27 37 52	1973	25 43 35	1975	23 49 22	1979
	♌ Aquilæ E.	85 11 56	2611	83 33 16	2618	81 54 45	2626	80 16 26	2638
18	Regulus W.	85 36 23	2009	87 29 43	2027	89 22 50	2025	91 15 45	2035
	JUPITER W.	83 47 42	2006	85 41 7	2014	87 34 19	2023	89 27 18	2032
	Spica W.	31 36 26	2023	33 29 24	2030	35 22 12	2037	37 14 49	2045
	♌ Aquilæ E.	72 9 31	2725	70 33 24	2750	68 57 50	2777	67 22 52	2807
	Fomalhaut E.	96 4 35	2364	94 20 9	2370	92 35 51	2378	90 51 44	2386
19	Regulus W.	100 36 26	2089	102 27 42	2102	104 18 38	2115	106 9 14	2128
	JUPITER W.	98 48 21	2086	100 39 41	2099	102 30 41	2113	104 21 21	2126
	Spica W.	46 34 24	2096	48 25 30	2107	50 16 18	2120	52 6 46	2133
	♌ Aquilæ E.	59 39 0	3004	58 8 52	3055	56 39 47	3109	55 11 48	3168
	Fomalhaut E.	82 14 54	2450	80 32 30	2466	78 50 29	2484	77 8 53	2503

GREENWICH MEAN TIME.									
LUNAR DISTANCES.									
Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
20	JUPITER W.	106 11 40	2141	108 1 37	2155	109 51 13	2170	111 40 26	2184
	Spica W.	53 56 55	2147	55 46 43	2161	57 36 9	2175	59 25 14	2190
	α Aquilæ E.	53 45 1	2323	52 19 31	2303	50 55 23	2379	49 32 43	2463
	Fomalhaut E.	75 27 44	2523	73 47 3	2544	72 6 51	2567	70 27 11	2592
	α Pegasi E.	96 40 59	2315	94 55 22	2328	93 10 4	2342	91 25 6	2357
21	Spica W.	68 24 58	2268	70 11 44	2285	71 58 6	2301	73 44 4	2318
	SATURN W.	32 1 53	2358	33 46 28	2364	35 30 54	2372	37 15 9	2382
	Antares W.	22 33 14	2263	24 20 8	2279	26 6 38	2296	27 52 43	2313
	Fomalhaut E.	62 17 45	2735	60 41 51	2767	59 6 40	2802	57 32 15	2840
	α Pegasi E.	82 45 55	2441	81 3 18	2458	79 21 6	2477	77 39 21	2496
	SUN E.	120 39 21	2593	119 0 16	2610	117 21 35	2627	115 43 17	2644
22	Spica W.	82 27 45	2403	84 11 16	2420	85 54 22	2437	87 37 4	2455
	SATURN W.	45 52 34	2441	47 35 10	2455	49 17 26	2469	50 59 23	2483
	Antares W.	36 37 1	2398	38 20 39	2415	40 3 52	2432	41 46 41	2450
	Fomalhaut E.	49 53 6	3062	48 24 10	3116	46 56 20	3173	45 29 39	3236
	α Pegasi E.	69 17 30	2600	67 38 35	2622	66 0 10	2645	64 22 16	2668
	SUN E.	107 37 45	2735	106 1 51	2753	104 26 21	2771	102 51 15	2788
23	Spica W.	96 4 34	2538	97 44 54	2554	99 24 52	2571	101 4 27	2587
	SATURN W.	59 24 4	2556	61 3 59	2572	62 43 33	2586	64 22 47	2601
	Antares W.	50 14 45	2533	51 55 12	2550	53 35 16	2566	55 14 58	2582
	α Pegasi E.	56 20 46	2793	54 46 9	2821	53 12 8	2849	51 38 44	2878
	SUN E.	95 1 37	2879	93 28 51	2897	91 56 28	2914	90 24 27	2931
24	Spica W.	109 16 58	2664	110 54 26	2680	112 31 33	2694	114 8 21	2708
	SATURN W.	72 33 55	2674	74 11 10	2687	75 48 7	2701	77 24 45	2716
	Antares W.	63 28 5	2659	65 5 40	2673	66 42 56	2688	68 19 52	2703
	α Pegasi E.	44 1 36	3047	42 32 21	3086	41 3 54	3128	39 36 18	3173
	SUN E.	82 49 42	3015	81 19 48	3030	79 50 13	3047	78 20 58	3062
25	SATURN W.	85 23 27	2781	86 58 20	2792	88 32 58	2805	90 7 20	2816
	Antares W.	76 19 53	2769	77 55 1	2782	79 29 53	2794	81 4 29	2806
	SUN E.	70 59 22	3136	69 31 56	3150	68 4 47	3163	66 37 54	3177
26	SATURN W.	97 55 26	2872	99 28 21	2883	101 1 2	2893	102 33 30	2902
	Antares W.	88 53 43	2861	90 26 52	2872	91 59 47	2881	93 32 30	2891
	α Aquilæ W.	44 11 11	4408	45 16 25	4335	46 22 45	4270	47 30 5	4212
	SUN E.	59 27 22	3240	58 2 0	3251	56 36 51	3262	55 11 55	3274
27	Antares W.	101 13 8	2935	102 44 43	2942	104 16 9	2950	105 47 25	2958
	α Aquilæ W.	53 18 58	3995	54 30 43	3961	55 43 1	3932	56 55 48	3907
	SUN E.	48 10 30	3326	46 46 49	3337	45 23 20	3346	44 0 2	3357
28	α Aquilæ W.	63 5 38	3807	64 20 33	3792	65 35 44	3778	66 51 9	3767
	Fomalhaut W.	37 53 34	4062	39 4 13	4001	40 15 52	3945	41 28 26	3896
	SUN E.	37 6 19	3403	35 44 6	3414	34 22 5	3423	33 0 14	3433
29	α Aquilæ W.	73 10 58	3722	74 27 22	3716	75 43 52	3710	77 0 28	3707
	Fomalhaut W.	47 42 16	3715	48 58 47	3689	50 15 46	3664	51 33 11	3643
	SUN E.	26 13 58	3490	24 53 23	3504	23 33 3	3520	22 13 1	3538

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
20	JUPITER W.	113 29 17	2200	115 17 44	2216	117 5 47	2233	118 53 26	2249
	Spica W.	61 13 57	2205	63 2 17	2220	64 50 14	2236	66 37 48	2252
	α Aquilæ E.	48 11 37	3554	46 52 12	3652	45 34 34	3761	44 18 51	3881
	Fomalhaut E.	68 48 5	2617	67 9 33	2644	65 31 38	2672	63 54 21	2703
	α Pegasi E.	89 40 30	2373	87 56 16	2389	86 12 25	2405	84 28 58	2422
21	Spica W.	75 29 37	2335	77 14 46	2352	78 59 30	2368	80 43 50	2386
	SATURN W.	38 59 10	2391	40 42 57	2403	42 26 27	2415	44 9 40	2429
	Antares W.	29 38 24	2330	31 23 40	2346	33 8 32	2364	34 52 59	2381
	Fomalhaut E.	55 58 39	2879	54 25 53	2921	52 54 1	2965	51 23 4	3012
	α Pegasi E.	75 58 2	2516	74 17 11	2537	72 36 49	2557	70 56 55	2578
	SUN E.	114 5 22	2662	112 27 51	2681	110 50 45	2698	109 14 3	2716
22	Spica W.	89 19 21	2472	91 1 14	2488	92 42 44	2504	94 23 51	2522
	SATURN W.	52 41 0	2497	54 22 17	2512	56 3 13	2527	57 43 49	2542
	Antares W.	43 29 5	2467	45 11 5	2483	46 52 42	2500	48 33 55	2517
	Fomalhaut E.	44 4 12	3303	42 40 4	3376	41 17 20	3455	39 56 6	3542
	α Pegasi E.	62 44 53	2692	61 8 2	2716	59 31 43	2741	57 55 58	2766
	SUN E.	101 16 32	2807	99 42 13	2825	98 8 18	2843	96 34 46	2861
23	Spica W.	102 43 40	2603	104 22 31	2618	106 1 1	2634	107 39 10	2649
	SATURN W.	66 1 40	2616	67 40 13	2630	69 18 27	2645	70 56 21	2660
	Antares W.	56 54 18	2598	58 33 16	2613	60 11 53	2629	61 50 9	2643
	α Pegasi E.	50 5 57	2909	48 33 49	2941	47 2 22	2974	45 31 37	3009
	SUN E.	88 52 47	2948	87 21 29	2965	85 50 33	2981	84 19 57	2998
24	Spica W.	115 44 50	2722	117 21 0	2736	118 56 52	2750	120 32 26	2763
	SATURN W.	79 1 4	2729	80 37 6	2742	82 12 50	2755	83 48 17	2768
	Antares W.	69 56 28	2716	71 32 46	2730	73 8 46	2744	74 44 28	2756
	α Pegasi E.	38 9 36	3221	36 43 52	3276	35 19 12	3333	33 55 39	3399
	SUN E.	76 52 2	3078	75 23 25	3092	73 55 6	3107	72 27 5	3122
25	SATURN W.	91 41 27	2828	93 15 18	2839	94 48 55	2851	96 22 17	2861
	Antares W.	82 38 49	2818	84 12 54	2828	85 46 45	2840	87 20 21	2851
	SUN E.	65 11 17	3190	63 44 56	3203	62 18 50	3215	60 52 59	3227
26	SATURN W.	104 5 46	2912	105 37 49	2921	107 9 41	2931	108 41 21	2940
	Antares W.	95 5 0	2900	96 37 19	2909	98 9 26	2918	99 41 22	2926
	α Aquilæ W.	48 38 20	4160	49 47 24	4111	50 57 15	4068	52 7 48	4030
	SUN E.	53 47 13	3285	52 22 44	3295	50 58 27	3306	49 34 23	3316
27	Antares W.	107 18 31	2964	108 49 29	2971	110 20 18	2977	111 50 59	2984
	α Aquilæ W.	58 9 1	3882	59 22 39	3860	60 36 39	3841	61 50 59	3822
	SUN E.	42 36 56	3366	41 14 1	3375	39 51 16	3385	38 28 42	3394
28	α Aquilæ W.	68 6 46	3755	69 22 35	3746	70 38 34	3737	71 54 42	3729
	Fomalhaut W.	42 41 50	3852	43 55 59	3812	45 10 49	3776	46 26 16	3745
	SUN E.	31 38 35	3443	30 17 7	3454	28 55 51	3465	27 34 48	3477
29	α Aquilæ W.	78 17 8	3702	79 33 53	3699	80 50 41	3696	82 7 32	3695
	Fomalhaut W.	52 50 59	3623	54 9 8	3605	55 27 37	3589	56 46 23	3574
	SUN E.	20 53 19	3558	19 33 59	3583	18 15 6	3611	16 56 44	3644

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		^h ^m ^s	^s	[°] ['] ["]	["]	['] ["]	^s	^m ^s	^s
Sat.	1	2 35 37.05	9.557	N.15 14 30.6	+45.05	15 54.11	66.10	3 4.06	0.299
SUN.	2	2 39 26.69	9.580	15 32 24.3	44.42	15 53.88	66.18	3 10.95	0.276
Mon.	3	2 43 16.88	9.603	15 50 2.6	43.77	15 53.65	66.26	3 17.30	0.253
Tues.	4	2 47 7.62	9.626	16 7 25.1	+43.11	15 53.42	66.35	3 23.10	0.230
Wed.	5	2 50 58.91	9.649	16 24 31.5	42.43	15 53.20	66.43	3 28.35	0.207
Thur.	6	2 54 50.75	9.672	16 41 21.5	41.74	15 52.98	66.51	3 33.06	0.184
Frid.	7	2 58 43.15	9.695	16 57 54.8	+41.03	15 52.76	66.59	3 37.21	0.161
Sat.	8	3 2 36.09	9.718	17 14 11.1	40.31	15 52.55	66.67	3 40.80	0.138
SUN.	9	3 6 29.60	9.741	17 30 10.1	39.59	15 52.34	66.75	3 43.85	0.115
Mon.	10	3 10 23.66	9.764	17 45 51.5	+38.85	15 52.14	66.84	3 46.34	0.092
Tues.	11	3 14 18.28	9.787	18 1 15.0	38.10	15 51.93	66.92	3 48.27	0.069
Wed.	12	3 18 13.45	9.810	18 16 20.4	37.34	15 51.73	67.00	3 49.64	0.046
Thur.	13	3 22 9.20	9.834	18 31 7.3	+35.57	15 51.53	67.08	3 50.46	0.022
Frid.	14	3 26 5.49	9.857	18 45 35.6	35.79	15 51.34	67.16	3 50.72	0.001
Sat.	15	3 30 2.36	9.881	18 59 44.9	34.99	15 51.14	67.24	3 50.41	0.024
SUN.	16	3 33 59.78	9.904	19 13 35.0	+34.18	15 50.95	67.32	3 49.54	0.047
Mon.	17	3 37 57.78	9.928	19 27 5.7	33.37	15 50.76	67.40	3 48.11	0.071
Tues.	18	3 41 56.34	9.951	19 40 16.7	32.54	15 50.57	67.48	3 46.12	0.095
Wed.	19	3 45 55.45	9.975	19 53 7.7	+31.70	15 50.38	67.56	3 43.56	0.118
Thur.	20	3 49 55.13	9.998	20 5 38.4	30.85	15 50.20	67.64	3 40.45	0.141
Frid.	21	3 53 55.37	10.021	20 17 48.7	30.00	15 50.01	67.72	3 36.78	0.164
Sat.	22	3 57 56.16	10.044	20 29 38.2	+29.13	15 49.83	67.79	3 32.56	0.187
SUN.	23	4 1 57.49	10.067	20 41 6.8	28.25	15 49.66	67.86	3 27.80	0.210
Mon.	24	4 5 59.35	10.089	20 52 14.1	27.36	15 49.49	67.93	3 22.50	0.232
Tues.	25	4 10 1.74	10.110	21 2 59.9	+26.46	15 49.32	68.00	3 16.69	0.253
Wed.	26	4 14 4.65	10.131	21 13 24.0	25.55	15 49.15	68.07	3 10.36	0.274
Thur.	27	4 18 8.05	10.152	21 23 26.2	24.63	15 48.99	68.14	3 3.53	0.294
Frid.	28	4 22 11.94	10.172	21 33 6.2	+23.70	15 48.84	68.20	2 56.22	0.314
Sat.	29	4 26 16.29	10.191	21 42 23.8	22.76	15 48.69	68.26	2 48.45	0.333
SUN.	30	4 30 21.10	10.209	21 51 18.8	21.82	15 48.54	68.32	2 40.22	0.351
Mon.	31	4 34 26.34	10.227	21 59 51.0	20.87	15 48.40	68.38	2 31.56	0.369
Tues.	32	4 38 31.98	10.243	N.22 8 0.2	+19.90	15 48.27	68.43	2 22.50	0.386

NOTE.—The mean time of semidiameter passing may be found by subtracting 0.18 from the sidereal time.

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		h m s	s	° ' "	"	m s	s	h m s
Sat.	1	2 35 37.54	9.558	N.15 14 32.9	+45.06	3 4.07	0.299	2 38 41.61
SUN.	2	2 39 27.20	9.580	15 32 26.7	44.42	3 10.97	0.276	2 42 38.17
Mon.	3	2 43 17.41	9.603	15 50 5.0	43.77	3 17.31	0.253	2 46 34.72
Tues.	4	2 47 8.16	9.626	16 7 27.5	+43.11	3 23.12	0.230	2 50 31.28
Wed.	5	2 50 59.47	9.649	16 24 34.0	42.43	3 28.37	0.207	2 54 27.84
Thur.	6	2 54 51.32	9.672	16 41 24.0	41.74	3 33.07	0.184	2 58 24.39
Frid.	7	2 58 43.73	9.695	16 57 57.3	+41.03	3 37.22	0.161	3 2 20.95
Sat.	8	3 2 36.69	9.718	17 14 13.6	40.31	3 40.81	0.138	3 6 17.50
SUN.	9	3 6 30.20	9.741	17 30 12.6	39.59	3 43.86	0.115	3 10 14.06
Mon.	10	3 10 24.27	9.764	17 45 54.0	+38.85	3 46.34	0.092	3 14 10.62
Tues.	11	3 14 18.90	9.788	18 1 17.4	38.10	3 48.28	0.069	3 18 7.17
Wed.	12	3 18 14.08	9.811	18 16 22.8	37.34	3 49.65	0.046	3 22 3.73
Thur.	13	3 22 9.82	9.834	18 31 9.7	+36.57	3 50.46	0.022	3 26 0.28
Frid.	14	3 26 6.12	9.857	18 45 37.9	35.79	3 50.72	0.002	3 29 56.84
Sat.	15	3 30 2.99	9.881	18 59 47.2	34.99	3 50.41	0.025	3 33 53.40
SUN.	16	3 34 0.42	9.905	19 13 37.3	+34.18	3 49.54	0.048	3 37 49.96
Mon.	17	3 37 58.40	9.928	19 27 7.9	33.36	3 48.11	0.071	3 41 46.51
Tues.	18	3 41 56.96	9.952	19 40 18.8	32.53	3 46.11	0.095	3 45 43.07
Wed.	19	3 45 56.07	9.975	19 53 9.7	+31.70	3 43.55	0.118	3 49 39.63
Thur.	20	3 49 55.74	9.998	20 5 40.3	30.85	3 40.44	0.141	3 53 36.18
Frid.	21	3 53 55.97	10.021	20 17 50.5	29.99	3 36.77	0.164	3 57 32.74
Sat.	22	3 57 56.75	10.044	20 29 39.9	+29.12	3 32.55	0.187	4 1 29.30
SUN.	23	4 1 58.07	10.066	20 41 8.4	28.24	3 27.79	0.210	4 5 25.86
Mon.	24	4 5 59.92	10.088	20 52 15.6	27.35	3 22.49	0.232	4 9 22.41
Tues.	25	4 10 2.30	10.110	21 3 1.4	+26.45	3 16.67	0.253	4 13 18.97
Wed.	26	4 14 5.18	10.131	21 13 25.4	25.54	3 10.34	0.274	4 17 15.53
Thur.	27	4 18 8.57	10.151	21 23 27.5	24.62	3 3.52	0.295	4 21 12.09
Frid.	28	4 22 12.44	10.171	21 33 7.4	+23.69	2 56.21	0.315	4 25 8.64
Sat.	29	4 26 16.77	10.190	21 42 24.9	22.76	2 48.43	0.334	4 29 5.20
SUN.	30	4 30 21.56	10.208	21 51 19.8	21.82	2 40.20	0.352	4 33 1.76
Mon.	31	4 34 26.77	10.226	21 59 51.9	20.86	2 31.55	0.369	4 36 58.32
Tues.	32	4 38 32.39	10.242	N.22 8 1.1	+19.90	2 22.49	0.386	4 40 54.88

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign + prefixed to the hourly change of declination indicates that north declinations are increasing.

Diff. for 1 Hour,
+9°.8565.
(Table III.)

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ'					
1	121	41 20 45.9	20 17.6	145.48	+ 0.35	0.0035752	+44.8	h m s 21 17 48.48
2	122	42 18 56.5	18 28.0	145.41	0.34	0.0036818	44.1	21 13 52.57
3	123	43 17 5.3	16 36.7	145.33	0.30	0.0037867	43.3	21 9 56.66
4	124	44 15 12.4	14 43.6	145.26	+ 0.23	0.0038897	+42.6	21 6 0.75
5	125	45 13 17.6	12 48.7	145.18	0.14	0.0039912	41.9	21 2 4.84
6	126	46 11 21.0	10 51.9	145.10	+ 0.03	0.0040911	41.2	20 58 8.93
7	127	47 9 22.5	8 53.3	145.03	— 0.10	0.0041893	+40.6	20 54 13.02
8	128	48 7 22.2	6 52.8	144.95	0.23	0.0042861	40.0	20 50 17.11
9	129	49 5 20.0	4 50.4	144.87	0.36	0.0043814	39.5	20 46 21.20
10	130	50 3 15.9	2 46.2	144.79	— 0.48	0.0044756	+39.0	20 42 25.29
11	131	51 1 10.0	0 40.2	144.72	0.60	0.0045686	38.5	20 38 29.38
12	132	51 59 2.4	58 32.4	144.65	0.69	0.0046604	38.1	20 34 33.47
13	133	52 56 53.0	56 22.8	144.58	— 0.77	0.0047514	+37.7	20 30 37.56
14	134	53 54 42.0	54 11.7	144.51	0.81	0.0048413	37.3	20 26 41.64
15	135	54 52 29.5	51 59.0	144.45	0.81	0.0049304	36.9	20 22 45.73
16	136	55 50 15.4	49 44.8	144.39	— 0.79	0.0050186	+36.5	20 18 49.82
17	137	56 48 0.0	47 29.2	144.33	0.74	0.0051059	36.2	20 14 53.91
18	138	57 45 43.3	45 12.2	144.28	0.67	0.0051924	35.8	20 10 58.00
19	139	58 43 25.3	42 54.1	144.23	— 0.56	0.0052778	+35.4	20 7 2.09
20	140	59 41 6.1	40 34.8	144.18	0.45	0.0053622	34.9	20 3 6.18
21	141	60 38 45.8	38 14.3	144.13	0.32	0.0054454	34.4	19 59 10.26
22	142	61 36 24.6	35 53.0	144.09	— 0.19	0.0055274	+33.8	19 55 14.35
23	143	62 34 2.4	33 30.6	144.05	— 0.06	0.0056079	33.2	19 51 18.44
24	144	63 31 39.3	31 7.3	144.02	+ 0.06	0.0056866	32.5	19 47 22.53
25	145	64 29 15.2	28 43.1	143.98	+ 0.16	0.0057638	+31.8	19 43 26.62
26	146	65 26 50.2	26 17.9	143.94	0.25	0.0058391	31.0	19 39 30.71
27	147	66 24 24.2	23 51.7	143.90	0.30	0.0059124	30.1	19 35 34.80
28	148	67 21 57.4	21 24.7	143.86	+ 0.33	0.0059835	+29.2	19 31 38.88
29	149	68 19 29.7	18 56.8	143.82	0.34	0.0060524	28.2	19 27 42.97
30	150	69 17 1.0	16 28.0	143.78	0.31	0.0061190	27.3	19 23 47.06
31	151	70 14 31.3	13 58.1	143.74	0.25	0.0061833	26.3	19 19 51.15
32	152	71 12 0.6	11 27.2	143.70	+ 0.16	0.0062451	+25.3	19 15 55.24
NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ' to the mean equinox of January 0 ^d .								Diff. for 1 Hour, —9 ^s .8296. (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	THE MOON'S								
	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	' "	' "	' "	"	' "	"	h m	m	d
1	14 43.7	14 43.4	53 56.6	-0.18	53 55.2	-0.07	6		29.3
2	14 43.3	14 43.6	53 55.0	+0.04	53 56.2	+0.16	0 19.2	1.95	0.6
3	14 44.3	14 45.5	53 58.8	0.28	54 2.9	0.40	1 7.2	2.05	1.6
4	14 47.0	14 48.9	54 8.5	+0.53	54 15.6	+0.66	1 57.3	2.12	2.6
5	14 51.3	14 54.2	54 24.4	0.81	54 35.0	0.96	2 48.6	2.15	3.6
6	14 57.6	15 1.4	54 47.4	1.11	55 1.6	1.26	3 40.1	2.14	4.6
7	15 5.8	15 10.8	55 17.7	+1.43	55 35.8	+1.59	4 30.8	2.09	5.6
8	15 16.2	15 22.1	55 55.8	1.74	56 17.5	1.88	5 20.1	2.02	6.6
9	15 28.5	15 35.3	56 41.0	2.02	57 6.0	2.14	6 8.0	1.97	7.6
10	15 42.5	15 49.9	57 32.3	+2.23	57 59.6	+2.30	6 55.0	1.95	8.6
11	15 57.5	16 5.1	58 27.4	2.32	58 55.3	2.30	7 41.9	1.97	9.6
12	16 12.5	16 19.6	59 22.6	2.23	59 48.8	2.11	8 30.0	2.05	10.6
13	16 26.3	16 32.2	60 13.2	+1.93	60 35.0	+1.68	9 20.7	2.18	11.6
14	16 37.3	16 41.3	60 53.6	1.39	61 8.3	1.05	10 15.2	2.37	12.6
15	16 44.1	16 45.6	61 18.7	+0.66	61 24.2	+0.25	11 14.4	2.57	13.6
16	16 45.7	16 44.5	61 24.7	-0.17	61 20.1	-0.59	12 18.0	2.72	14.6
17	16 41.9	16 38.0	61 10.6	0.99	60 56.4	1.35	13 24.1	2.76	15.6
18	16 33.1	16 27.1	60 38.1	1.67	60 16.3	1.93	14 29.4	2.66	16.6
19	16 20.4	16 13.1	59 51.7	-2.14	59 24.9	-2.29	15 30.8	2.45	17.6
20	16 5.5	15 57.6	58 56.7	2.38	58 27.8	2.41	16 26.8	2.22	18.6
21	15 49.7	15 41.9	57 58.8	2.40	57 30.3	2.34	17 17.4	2.01	19.6
22	15 34.4	15 27.3	57 2.7	-2.25	56 36.4	-2.12	18 3.5	1.85	20.6
23	15 20.6	15 14.3	56 11.8	1.98	55 49.0	1.81	18 46.4	1.74	21.6
24	15 8.7	15 3.6	55 28.3	1.64	55 9.7	1.46	19 27.6	1.70	22.6
25	14 59.2	14 55.3	54 53.2	-1.28	54 39.1	-1.09	20 8.2	1.70	23.6
26	14 52.0	14 49.4	54 27.1	0.91	54 17.2	0.74	20 49.3	1.74	24.6
27	14 47.2	14 45.6	54 9.4	0.57	54 3.5	0.42	21 31.9	1.82	25.6
28	14 44.5	14 43.9	53 59.4	-0.27	53 57.1	-0.12	22 16.7	1.92	26.6
29	14 43.7	14 44.0	53 56.5	+0.01	53 57.4	+0.13	23 4.0	2.02	27.6
30	14 44.6	14 45.6	53 59.7	0.25	54 3.4	0.36	23 53.6	2.11	28.6
31	14 47.0	14 48.7	54 8.4	0.47	54 14.7	0.58	6		29.6
32	14 50.7	14 53.1	54 22.2	+0.68	54 30.9	+0.78	0 44.9	2.16	1.0

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 1.					MONDAY 3.				
0	2 13 9.78	1.9587	N.18 40 29.5	10.017	0	3 51 34.70	2.1398	N.24 57 5.3	5.379
1	2 15 7.41	1.9624	18 50 28.2	9.938	1	3 53 43.19	2.1431	25 2 24.6	5.264
2	2 17 5.26	1.9661	19 0 22.1	9.859	2	3 55 51.87	2.1465	25 7 37.0	5.148
3	2 19 3.34	1.9698	19 10 11.3	9.780	3	3 58 0.75	2.1496	25 12 42.4	5.032
4	2 21 1.64	1.9736	19 19 55.7	9.699	4	4 0 9.82	2.1528	25 17 40.8	4.915
5	2 23 0.17	1.9773	19 29 35.2	9.618	5	4 2 19.09	2.1561	25 22 32.2	4.798
6	2 24 58.92	1.9811	19 39 9.9	9.537	6	4 4 28.55	2.1593	25 27 16.6	4.681
7	2 26 57.90	1.9849	19 48 39.6	9.453	7	4 6 38.20	2.1623	25 31 53.9	4.562
8	2 28 57.11	1.9887	19 58 4.3	9.369	8	4 8 48.03	2.1653	25 36 24.0	4.443
9	2 30 56.55	1.9926	20 7 23.9	9.285	9	4 10 58.04	2.1683	25 40 47.0	4.323
10	2 32 56.22	1.9964	20 16 38.5	9.200	10	4 13 8.23	2.1713	25 45 2.8	4.203
11	2 34 56.12	2.0002	20 25 47.9	9.114	11	4 15 18.60	2.1743	25 49 11.4	4.082
12	2 36 56.25	2.0041	20 34 52.1	9.027	12	4 17 29.15	2.1778	25 53 12.7	3.961
13	2 38 56.61	2.0080	20 43 51.1	8.939	13	4 19 39.87	2.1800	25 57 6.7	3.839
14	2 40 57.21	2.0119	20 52 44.8	8.850	14	4 21 50.75	2.1828	26 0 53.4	3.717
15	2 42 58.04	2.0157	21 1 33.1	8.760	15	4 24 1.80	2.1855	26 4 32.8	3.595
16	2 44 59.10	2.0196	21 10 16.0	8.670	16	4 26 13.01	2.1881	26 8 4.8	3.471
17	2 47 0.39	2.0235	21 18 53.5	8.580	17	4 28 24.37	2.1907	26 11 29.3	3.347
18	2 49 1.92	2.0274	21 27 25.6	8.488	18	4 30 35.89	2.1932	26 14 46.4	3.223
19	2 51 3.68	2.0313	21 35 52.1	8.395	19	4 32 47.56	2.1957	26 17 56.0	3.098
20	2 53 5.68	2.0352	21 44 13.0	8.302	20	4 34 59.38	2.1982	26 20 58.1	2.973
21	2 55 7.91	2.0392	21 52 28.3	8.207	21	4 37 11.34	2.2005	26 23 52.7	2.847
22	2 57 10.38	2.0431	22 0 37.9	8.112	22	4 39 23.44	2.2028	26 26 39.7	2.720
23	2 59 13.08	2.0470	N.22 8 41.8	8.017	23	4 41 35.67	2.2050	N.26 29 19.1	2.594
SUNDAY 2.					TUESDAY 4.				
0	3 1 16.02	2.0509	N.22 16 40.0	7.921	0	4 43 48.04	2.2072	N.26 31 51.0	2.467
1	3 3 19.19	2.0548	22 24 32.3	7.823	1	4 46 0.54	2.2093	26 34 15.2	2.339
2	3 5 22.59	2.0587	22 32 18.7	7.725	2	4 48 13.16	2.2113	26 36 31.7	2.212
3	3 7 26.23	2.0626	22 39 59.3	7.627	3	4 50 25.90	2.2133	26 38 40.6	2.084
4	3 9 30.10	2.0664	22 47 33.9	7.527	4	4 52 38.76	2.2153	26 40 41.8	1.956
5	3 11 34.20	2.0702	22 55 2.5	7.426	5	4 54 51.73	2.2172	26 42 35.3	1.827
6	3 13 38.53	2.0741	23 2 25.0	7.324	6	4 57 4.82	2.2190	26 44 21.0	1.697
7	3 15 43.09	2.0779	23 9 41.4	7.222	7	4 59 18.01	2.2207	26 45 58.9	1.568
8	3 17 47.88	2.0817	23 16 51.7	7.120	8	5 1 31.30	2.2223	26 47 29.1	1.438
9	3 19 52.90	2.0855	23 23 55.8	7.016	9	5 3 44.68	2.2238	26 48 51.5	1.307
10	3 21 58.14	2.0893	23 30 53.6	6.912	10	5 5 58.16	2.2253	26 50 6.0	1.177
11	3 24 3.61	2.0931	23 37 45.2	6.807	11	5 8 11.72	2.2268	26 51 12.7	1.047
12	3 26 9.31	2.0968	23 44 30.5	6.702	12	5 10 25.37	2.2282	26 52 11.6	0.916
13	3 28 15.23	2.1005	23 51 9.4	6.595	13	5 12 39.10	2.2294	26 53 2.6	0.784
14	3 30 21.37	2.1042	23 57 41.9	6.488	14	5 14 52.90	2.2307	26 53 45.7	0.653
15	3 32 27.74	2.1079	24 4 8.0	6.381	15	5 17 6.78	2.2319	26 54 21.0	0.521
16	3 34 34.32	2.1115	24 10 27.6	6.272	16	5 19 20.73	2.2330	26 54 48.3	0.389
17	3 36 41.12	2.1152	24 16 40.6	6.162	17	5 21 34.74	2.2339	26 55 7.7	0.257
18	3 38 48.14	2.1188	24 22 47.0	6.052	18	5 23 48.80	2.2348	26 55 19.2	+ 0.125
19	3 40 55.37	2.1223	24 28 46.8	5.942	19	5 26 2.92	2.2357	26 55 22.7	- 0.007
20	3 43 2.82	2.1259	24 34 40.0	5.831	20	5 28 17.09	2.2365	26 55 18.3	0.139
21	3 45 10.48	2.1294	24 40 26.5	5.718	21	5 30 31.30	2.2372	26 55 6.0	0.272
22	3 47 18.35	2.1328	24 46 6.2	5.605	22	5 32 45.56	2.2379	26 54 45.7	0.405
23	3 49 26.42	2.1363	24 51 39.1	5.492	23	5 34 59.85	2.2385	26 54 17.4	0.537
24	3 51 34.70	2.1398	N.24 57 5.3	5.379	24	5 37 14.18	2.2391	N.26 53 41.2	0.670

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 5.					FRIDAY 7.				
0	5 37 14.18	2.2391	N.26 53 41.2	0.670	0	7 24 2.46	2.1897	N.23 49 54.9	6.894
1	5 39 28.54	2.2395	26 52 57.0	0.803	1	7 26 13.78	2.1876	23 42 57.6	7.015
2	5 41 42.92	2.2398	26 52 4.8	0.937	2	7 28 24.97	2.1854	23 35 53.1	7.136
3	5 43 57.31	2.2400	26 51 4.6	1.070	3	7 30 36.03	2.1832	23 28 41.3	7.257
4	5 46 11.72	2.2402	26 49 56.4	1.203	4	7 32 46.95	2.1809	23 21 22.3	7.376
5	5 48 26.14	2.2404	26 48 40.2	1.337	5	7 34 57.74	2.1787	23 13 56.2	7.495
6	5 50 40.57	2.2405	26 47 16.0	1.470	6	7 37 8.39	2.1765	23 6 22.9	7.615
7	5 52 55.00	2.2405	26 45 43.8	1.603	7	7 39 18.90	2.1741	22 58 42.4	7.733
8	5 55 9.43	2.2405	26 44 3.6	1.736	8	7 41 29.28	2.1718	22 50 54.9	7.850
9	5 57 23.86	2.2404	26 42 15.5	1.868	9	7 43 39.52	2.1695	22 43 0.4	7.967
10	5 59 38.28	2.2402	26 40 19.4	2.002	10	7 45 49.62	2.1672	22 34 58.9	8.083
11	6 1 52.68	2.2399	26 38 15.3	2.135	11	7 47 59.58	2.1648	22 26 50.4	8.200
12	6 4 7.07	2.2397	26 36 3.2	2.268	12	7 50 9.39	2.1624	22 18 34.9	8.316
13	6 6 21.44	2.2393	26 33 43.1	2.401	13	7 52 19.06	2.1600	22 10 12.5	8.430
14	6 8 35.78	2.2387	26 31 15.1	2.534	14	7 54 28.59	2.1577	22 1 43.3	8.544
15	6 10 50.08	2.2381	26 28 39.1	2.667	15	7 56 37.98	2.1553	21 53 7.2	8.658
16	6 13 4.35	2.2375	26 25 55.1	2.799	16	7 58 47.23	2.1529	21 44 24.3	8.771
17	6 15 18.58	2.2369	26 23 3.2	2.931	17	8 0 56.33	2.1505	21 35 34.7	8.883
18	6 17 32.78	2.2362	26 20 3.4	3.063	18	8 3 5.29	2.1481	21 26 38.4	8.994
19	6 19 46.93	2.2354	26 16 55.7	3.195	19	8 5 14.10	2.1457	21 17 35.4	9.106
20	6 22 1.03	2.2345	26 13 40.0	3.327	20	8 7 22.77	2.1433	21 8 25.7	9.217
21	6 24 15.07	2.2336	26 10 16.4	3.459	21	8 9 31.30	2.1410	20 59 9.4	9.326
22	6 26 29.06	2.2327	26 6 44.9	3.590	22	8 11 39.69	2.1386	20 49 46.6	9.434
23	6 28 42.99	2.2316	N.26 3 5.6	3.721	23	8 13 47.93	2.1362	N.20 40 17.3	9.543
THURSDAY 6.					SATURDAY 8.				
0	6 30 56.85	2.2305	N.25 59 18.4	3.852	0	8 15 56.03	2.1338	N.20 30 41.4	9.561
1	6 33 10.65	2.2294	25 55 23.3	3.983	1	8 18 3.99	2.1315	20 20 59.1	9.758
2	6 35 24.38	2.2282	25 51 20.4	4.113	2	8 20 11.81	2.1291	20 11 10.4	9.865
3	6 37 38.03	2.2269	25 47 9.7	4.243	3	8 22 19.48	2.1267	20 1 15.3	9.971
4	6 39 51.61	2.2256	25 42 51.2	4.373	4	8 24 27.01	2.1244	19 51 13.9	10.076
5	6 42 5.10	2.2242	25 38 24.9	4.502	5	8 26 34.41	2.1221	19 41 6.2	10.180
6	6 44 18.51	2.2227	25 33 50.9	4.632	6	8 28 41.67	2.1198	19 30 52.3	10.283
7	6 46 31.83	2.2212	25 29 9.1	4.761	7	8 30 48.79	2.1176	19 20 32.2	10.387
8	6 48 45.06	2.2198	25 24 19.6	4.889	8	8 32 55.78	2.1153	19 10 5.9	10.490
9	6 50 58.21	2.2183	25 19 22.4	5.018	9	8 35 2.63	2.1131	18 59 33.4	10.592
10	6 53 11.26	2.2167	25 14 17.5	5.146	10	8 37 9.35	2.1108	18 48 54.8	10.692
11	6 55 24.21	2.2150	25 9 4.9	5.273	11	8 39 15.93	2.1086	18 38 10.3	10.792
12	6 57 37.06	2.2133	25 3 44.7	5.401	12	8 41 22.38	2.1064	18 27 19.8	10.891
13	6 59 49.80	2.2115	24 58 16.8	5.527	13	8 43 28.70	2.1043	18 16 23.4	10.990
14	7 2 2.44	2.2097	24 52 41.4	5.653	14	8 45 34.89	2.1022	18 5 21.0	11.089
15	7 4 14.97	2.2079	24 46 58.4	5.779	15	8 47 40.96	2.1001	17 54 12.7	11.187
16	7 6 27.39	2.2060	24 41 7.9	5.905	16	8 49 46.90	2.0980	17 42 58.6	11.283
17	7 8 39.69	2.2041	24 35 9.8	6.031	17	8 51 52.72	2.0960	17 31 38.8	11.378
18	7 10 51.88	2.2022	24 29 4.2	6.155	18	8 53 58.42	2.0940	17 20 13.2	11.473
19	7 13 3.95	2.2002	24 22 51.2	6.279	19	8 56 4.00	2.0920	17 8 42.0	11.568
20	7 15 15.90	2.1982	24 16 30.7	6.403	20	8 58 9.46	2.0900	16 57 5.1	11.662
21	7 17 27.73	2.1961	24 10 2.8	6.526	21	9 0 14.80	2.0881	16 45 22.6	11.754
22	7 19 39.43	2.1940	24 3 27.5	6.649	22	9 2 20.03	2.0863	16 33 34.6	11.846
23	7 21 51.01	2.1919	23 56 44.9	6.772	23	9 4 25.15	2.0845	16 21 41.1	11.937
24	7 24 2.46	2.1897	N.23 49 54.9	6.894	24	9 6 30.17	2.0827	N.16 9 42.1	12.028

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 9.					TUESDAY 11.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
1	9 6 30.17	2.0827	N. 16 9 42.1	12.028	1	10 45 23.04	2.0614	N. 5 4 11.6	15.346
2	9 8 35.08	2.0809	15 57 37.7	12.118	2	10 47 26.76	2.0627	4 48 49.5	15.391
3	9 10 39.88	2.0792	15 45 28.0	12.207	3	10 49 30.56	2.0640	4 33 24.7	15.435
4	9 12 44.58	2.0775	15 33 12.9	12.296	4	10 51 34.44	2.0653	4 17 57.3	15.477
5	9 14 49.18	2.0759	15 20 52.5	12.382	5	10 53 38.40	2.0668	4 2 27.4	15.518
6	9 16 53.69	2.0743	15 8 27.0	12.468	6	10 55 42.46	2.0684	3 46 55.1	15.558
7	9 18 58.10	2.0727	14 55 56.3	12.554	7	10 57 46.61	2.0700	3 31 20.4	15.597
8	9 21 2.42	2.0712	14 43 20.5	12.639	8	10 59 50.86	2.0718	3 15 43.4	15.636
9	9 23 6.65	2.0698	14 30 39.6	12.723	9	11 1 55.22	2.0737	3 0 4.1	15.673
10	9 25 10.80	2.0685	14 17 53.7	12.807	10	11 3 59.70	2.0756	2 44 22.7	15.708
11	9 27 14.87	2.0672	14 5 2.8	12.889	11	11 6 4.29	2.0775	2 28 39.2	15.742
12	9 29 18.86	2.0659	13 52 7.0	12.971	12	11 8 9.00	2.0796	2 12 53.7	15.774
13	9 31 22.77	2.0646	13 39 6.3	13.052	13	11 10 13.84	2.0817	1 57 6.3	15.806
14	9 33 26.61	2.0634	13 26 0.8	13.132	14	11 12 18.81	2.0840	1 41 17.0	15.837
15	9 35 30.38	2.0622	13 12 50.5	13.211	15	11 14 23.92	2.0863	1 25 25.9	15.866
16	9 37 34.08	2.0611	12 59 35.5	13.288	16	11 16 29.17	2.0887	1 9 33.1	15.893
17	9 39 37.71	2.0601	12 46 15.9	13.366	17	11 18 34.56	2.0912	0 53 38.7	15.920
18	9 41 41.29	2.0592	12 32 51.6	13.444	18	11 20 40.11	2.0938	0 37 42.7	15.946
19	9 43 44.81	2.0582	12 19 22.8	13.517	19	11 22 45.82	2.0965	0 21 45.2	15.969
20	9 45 48.27	2.0574	12 5 49.5	13.592	20	11 24 51.69	2.0992	N. 0 5 46.4	15.991
21	9 47 51.69	2.0566	11 52 11.7	13.666	21	11 26 57.73	2.1020	S. 0 10 13.7	16.012
22	9 49 55.06	2.0558	11 38 29.5	13.739	22	11 29 3.93	2.1048	0 26 15.1	16.032
23	9 51 58.39	2.0552	11 24 43.0	13.812	23	11 31 10.31	2.1079	0 42 17.6	16.051
24	9 54 1.68	2.0546	N. 11 10 52.1	13.883	24	11 33 16.88	2.1111	S. 0 58 21.2	16.068
MONDAY 10.					WEDNESDAY 12.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
1	9 56 4.94	2.0541	N. 10 56 57.0	13.953	1	11 35 23.64	2.1143	S. 1 14 25.7	16.083
2	9 58 8.17	2.0536	10 42 57.7	14.022	2	11 37 30.60	2.1176	1 30 31.1	16.098
3	10 0 11.37	2.0531	10 28 54.3	14.091	3	11 39 37.75	2.1209	1 46 37.4	16.110
4	10 2 14.54	2.0527	10 14 46.8	14.158	4	11 41 45.10	2.1242	2 2 44.3	16.120
5	10 4 17.69	2.0524	10 0 35.3	14.225	5	11 43 52.66	2.1278	2 18 51.8	16.130
6	10 6 20.83	2.0522	9 46 19.8	14.290	6	11 46 0.44	2.1315	2 34 59.9	16.138
7	10 8 23.96	2.0521	9 32 0.5	14.354	7	11 48 8.44	2.1353	2 51 8.4	16.145
8	10 10 27.08	2.0520	9 17 37.3	14.418	8	11 50 16.67	2.1391	3 7 17.3	16.150
9	10 12 30.20	2.0519	9 3 10.3	14.482	9	11 52 25.13	2.1429	3 23 26.4	16.153
10	10 14 33.31	2.0519	8 48 39.5	14.543	10	11 54 33.82	2.1468	3 39 35.7	16.155
11	10 16 36.43	2.0521	8 34 5.1	14.603	11	11 56 42.75	2.1509	3 55 45.0	16.155
12	10 18 39.56	2.0523	8 19 27.1	14.663	12	11 58 51.93	2.1551	4 11 54.3	16.154
13	10 20 42.70	2.0525	8 4 45.5	14.722	13	12 1 1.37	2.1594	4 28 3.5	16.152
14	10 22 45.86	2.0528	7 50 0.4	14.780	14	12 3 11.06	2.1637	4 44 12.5	16.147
15	10 24 49.04	2.0532	7 35 11.9	14.837	15	12 5 21.01	2.1682	5 0 21.1	16.140
16	10 26 52.25	2.0537	7 20 20.0	14.892	16	12 7 31.24	2.1727	5 16 29.3	16.132
17	10 28 55.49	2.0542	7 5 24.8	14.947	17	12 9 41.74	2.1772	5 32 37.0	16.123
18	10 30 58.76	2.0548	6 50 26.4	15.001	18	12 11 52.51	2.1818	5 48 44.1	16.112
19	10 33 2.07	2.0555	6 35 24.7	15.054	19	12 14 3.56	2.1866	6 4 50.4	16.098
20	10 35 5.42	2.0563	6 20 19.9	15.105	20	12 16 14.90	2.1915	6 20 55.9	16.083
21	10 37 8.83	2.0572	6 5 12.1	15.155	21	12 18 26.54	2.1965	6 37 0.4	16.067
22	10 39 12.29	2.0582	5 50 1.3	15.204	22	12 20 38.48	2.2016	6 53 3.9	16.048
23	10 41 15.81	2.0592	5 34 47.6	15.252	23	12 22 50.73	2.2067	7 9 6.2	16.028
24	10 43 19.39	2.0602	5 19 31.0	15.300	24	12 25 3.28	2.2118	7 25 7.3	16.007
	10 45 23.04	2.0614	N. 5 4 11.6	15.346		12 27 16.14	2.2170	S. 7 41 7.0	15.983

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 13.					SATURDAY 15.				
0	12 27 16.14	2.2170	S. 7 41 7.0	15.983	0	14 21 5.10	2.5434	S. 19 22 29.0	12.407
1	12 29 29.32	2.2224	7 57 5.2	15.957	1	14 23 37.93	2.5509	19 34 49.6	12.278
2	12 31 42.83	2.2279	8 13 1.8	15.930	2	14 26 11.21	2.5584	19 47 2.3	12.146
3	12 33 56.67	2.2335	8 28 56.8	15.901	3	14 28 44.94	2.5658	19 59 7.1	12.013
4	12 36 10.85	2.2391	8 44 49.9	15.869	4	14 31 19.11	2.5732	20 11 3.8	11.877
5	12 38 25.36	2.2447	9 0 41.1	15.836	5	14 33 53.72	2.5806	20 22 52.3	11.738
6	12 40 40.21	2.2504	9 16 30.2	15.800	6	14 36 28.78	2.5879	20 34 32.4	11.598
7	12 42 55.41	2.2562	9 32 17.1	15.763	7	14 39 4.27	2.5951	20 46 4.1	11.456
8	12 45 10.97	2.2622	9 48 1.8	15.725	8	14 41 40.19	2.6023	20 57 27.1	11.311
9	12 47 26.88	2.2682	10 3 44.1	15.684	9	14 44 16.55	2.6095	21 8 41.4	11.164
10	12 49 43.16	2.2743	10 19 23.9	15.641	10	14 46 53.33	2.6165	21 19 46.8	11.023
11	12 51 59.80	2.2804	10 35 1.0	15.596	11	14 49 30.53	2.6236	21 30 43.2	10.884
12	12 54 16.81	2.2866	10 50 35.4	15.549	12	14 52 8.16	2.6307	21 41 30.5	10.741
13	12 56 34.19	2.2929	11 6 6.9	15.500	13	14 54 46.21	2.6375	21 52 8.5	10.595
14	12 58 51.96	2.2993	11 21 35.4	15.448	14	14 57 24.66	2.6443	22 2 37.1	10.448
15	13 1 10.11	2.3057	11 37 0.7	15.395	15	15 0 3.52	2.6510	22 12 56.3	10.299
16	13 3 28.65	2.3122	11 52 22.8	15.340	16	15 2 42.78	2.6577	22 23 5.8	10.147
17	13 5 47.58	2.3187	12 7 41.5	15.283	17	15 5 22.45	2.6644	22 33 5.6	9.994
18	13 8 6.90	2.3253	12 22 56.8	15.224	18	15 8 2.51	2.6708	22 42 55.5	9.749
19	13 10 26.62	2.3318	12 38 8.4	15.162	19	15 10 42.95	2.6772	22 52 35.5	9.502
20	13 12 46.75	2.3383	12 53 16.2	15.098	20	15 13 23.78	2.6836	23 2 5.3	9.252
21	13 15 7.28	2.3446	13 8 20.1	15.032	21	15 16 4.98	2.6897	23 11 24.9	9.001
22	13 17 28.22	2.3509	13 23 20.0	14.964	22	15 18 46.54	2.6957	23 20 34.2	8.747
23	13 19 49.58	2.3572	S. 13 38 15.8	14.894	23	15 21 28.47	2.7017	S. 23 29 33.0	8.492
FRIDAY 14.					SUNDAY 16.				
0	13 22 11.36	2.3635	S. 13 53 7.3	14.822	0	15 24 10.75	2.7076	S. 23 38 21.3	8.236
1	13 24 33.56	2.3700	14 7 54.4	14.747	1	15 26 53.38	2.7134	23 46 58.9	8.007
2	13 26 56.18	2.3805	14 22 36.9	14.670	2	15 29 36.34	2.7189	23 55 25.8	7.777
3	13 29 19.22	2.3906	14 37 14.8	14.591	3	15 32 19.63	2.7244	24 3 41.9	7.547
4	13 31 42.69	2.3947	14 51 47.8	14.509	4	15 35 3.25	2.7296	24 11 47.0	7.317
5	13 34 6.59	2.4020	15 6 15.9	14.426	5	15 37 47.18	2.7347	24 19 41.1	7.087
6	13 36 30.93	2.4093	15 20 38.9	14.340	6	15 40 31.42	2.7398	24 27 24.0	6.857
7	13 38 55.71	2.4166	15 34 56.7	14.252	7	15 43 15.96	2.7447	24 34 55.7	6.627
8	13 41 20.92	2.4239	15 49 9.1	14.162	8	15 46 0.78	2.7498	24 42 16.1	6.397
9	13 43 46.57	2.4313	16 3 16.1	14.069	9	15 48 45.87	2.7538	24 49 25.0	6.167
10	13 46 12.67	2.4387	16 17 17.4	13.974	10	15 51 31.23	2.7583	24 56 22.4	5.937
11	13 48 39.21	2.4460	16 31 13.0	13.877	11	15 54 16.86	2.7626	25 3 8.3	5.707
12	13 51 6.19	2.4534	16 45 2.7	13.777	12	15 57 2.74	2.7666	25 9 42.6	5.477
13	13 53 33.62	2.4609	16 58 46.3	13.676	13	15 59 48.85	2.7704	25 16 5.1	5.247
14	13 56 1.50	2.4684	17 12 23.8	13.572	14	16 2 35.19	2.7742	25 22 15.9	5.017
15	13 58 29.83	2.4759	17 25 55.0	13.466	15	16 5 21.75	2.7777	25 28 14.8	4.787
16	14 0 58.61	2.4835	17 39 19.7	13.357	16	16 8 8.51	2.7810	25 34 1.7	4.557
17	14 3 27.85	2.4910	17 52 37.8	13.247	17	16 10 55.47	2.7842	25 39 36.7	4.327
18	14 5 57.53	2.4984	18 5 49.3	13.134	18	16 13 42.61	2.7871	25 44 59.6	4.097
19	14 8 27.66	2.5060	18 18 53.9	13.018	19	16 16 29.92	2.7898	25 50 10.4	3.867
20	14 10 58.25	2.5136	18 31 51.5	12.900	20	16 19 17.39	2.7925	25 55 9.1	3.637
21	14 13 29.29	2.5211	18 44 41.9	12.780	21	16 22 5.02	2.7949	25 59 55.5	3.407
22	14 16 0.78	2.5286	18 57 25.1	12.658	22	16 24 52.78	2.7971	26 4 29.7	3.177
23	14 18 32.72	2.5360	19 10 0.8	12.533	23	16 27 40.67	2.7992	26 8 51.6	2.947
24	14 21 5.10	2.5434	S. 19 22 29.0	12.407	24	16 30 28.67	2.8008	S. 26 13 1.2	2.717

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 17.					WEDNESDAY 19.				
0	h m s	"	"	"	0	h m s	"	"	"
1	16 30 28.67	2.8008	S. 26 13 1.2	4.075	1	18 42 56.92	2.6443	S. 25 32 22.1	5.459
2	16 33 16.77	2.8023	26 16 58.4	3.850	2	18 45 35.36	2.6369	25 26 49.4	5.630
3	16 36 4.95	2.8037	26 20 43.2	3.643	3	18 48 13.35	2.6293	25 21 6.5	5.799
4	16 38 53.21	2.8048	26 24 15.5	3.435	4	18 50 50.88	2.6217	25 15 13.5	5.967
5	16 41 41.53	2.8057	26 27 35.4	3.227	5	18 53 27.95	2.6140	25 9 10.5	6.132
6	16 44 29.90	2.8065	26 30 42.8	3.019	6	18 56 4.56	2.6062	25 2 57.7	6.295
7	16 47 18.31	2.8070	26 33 37.7	2.811	7	18 58 40.70	2.5983	24 56 35.1	6.457
8	16 50 6.74	2.8072	26 36 20.1	2.602	8	19 1 16.36	2.5903	24 50 2.9	6.616
9	16 52 55.18	2.8078	26 38 50.0	2.393	9	19 3 51.54	2.5822	24 43 21.2	6.774
10	16 55 43.61	2.8071	26 41 7.3	2.184	10	19 6 26.22	2.5739	24 36 30.0	6.931
11	16 58 32.03	2.8068	26 43 12.1	1.975	11	19 9 0.41	2.5657	24 29 29.5	7.085
12	17 1 20.42	2.8062	26 45 4.3	1.766	12	19 11 34.10	2.5574	24 22 19.8	7.237
13	17 4 8.77	2.8053	26 46 44.0	1.557	13	19 14 7.30	2.5491	24 15 1.1	7.387
14	17 6 57.06	2.8042	26 48 11.1	1.349	14	19 16 39.99	2.5406	24 7 33.4	7.536
15	17 9 45.28	2.8031	26 49 25.8	1.141	15	19 19 12.17	2.5321	23 59 56.8	7.682
16	17 12 33.43	2.8017	26 50 28.0	0.932	16	19 21 43.84	2.5236	23 52 11.5	7.827
17	17 15 21.48	2.7999	26 51 17.7	0.724	17	19 24 15.00	2.5150	23 44 17.6	7.969
18	17 18 9.42	2.7980	26 51 54.9	0.517	18	19 26 45.64	2.5063	23 36 15.2	8.111
19	17 20 57.24	2.7959	26 52 19.7	0.310	19	19 29 15.76	2.4977	23 28 4.3	8.250
20	17 23 44.93	2.7936	26 52 32.1	- 0.103	20	19 31 45.36	2.4889	23 19 45.2	8.387
21	17 26 32.47	2.7910	26 52 32.1	+ 0.103	21	19 34 14.43	2.4802	23 11 17.9	8.522
22	17 29 19.85	2.7882	26 52 19.7	0.309	22	19 36 42.98	2.4714	23 2 42.6	8.654
23	17 32 7.06	2.7853	26 51 55.0	0.514	23	19 39 11.00	2.4627	22 53 59.4	8.786
24	17 34 54.09	2.7822	S. 26 51 18.0	0.718	24	19 41 38.50	2.4539	S. 22 45 8.3	8.916
TUESDAY 18.					THURSDAY 20.				
0	h m s	"	"	"	0	h m s	"	"	"
1	17 37 40.93	2.7789	S. 26 50 28.8	0.922	1	19 44 5.47	2.4450	S. 22 36 9.5	9.043
2	17 40 27.56	2.7753	26 49 27.4	1.124	2	19 46 31.90	2.4362	22 27 3.2	9.168
3	17 43 13.96	2.7714	26 48 13.9	1.326	3	19 48 57.81	2.4274	22 17 19.4	9.291
4	17 46 0.13	2.7675	26 46 48.3	1.527	4	19 51 23.19	2.4186	22 8 28.3	9.412
5	17 48 46.06	2.7633	26 45 10.6	1.727	5	19 53 48.04	2.4097	21 59 0.0	9.531
6	17 51 31.73	2.7589	26 43 21.0	1.926	6	19 56 12.35	2.4007	21 49 24.6	9.649
7	17 54 17.13	2.7543	26 41 19.5	2.124	7	19 58 36.13	2.3919	21 39 42.1	9.765
8	17 57 2.25	2.7497	26 39 6.1	2.321	8	20 0 59.38	2.3831	21 29 52.8	9.878
9	17 59 47.09	2.7448	26 36 41.0	2.516	9	20 3 22.10	2.3743	21 19 56.7	9.990
10	18 2 31.63	2.7397	26 34 4.2	2.710	10	20 5 44.30	2.3656	21 9 54.0	10.099
11	18 5 15.86	2.7344	26 31 15.8	2.903	11	20 8 5.97	2.3567	20 59 44.8	10.207
12	18 7 59.76	2.7289	26 28 15.8	3.096	12	20 10 27.11	2.3479	20 49 29.1	10.314
13	18 10 43.33	2.7233	26 25 4.3	3.287	13	20 12 47.72	2.3392	20 39 7.1	10.418
14	18 13 26.56	2.7176	26 21 41.4	3.476	14	20 15 7.81	2.3305	20 28 38.9	10.521
15	18 16 9.44	2.7117	26 18 7.2	3.663	15	20 17 27.38	2.3218	20 18 4.6	10.621
16	18 18 51.96	2.7056	26 14 21.8	3.850	16	20 19 46.43	2.3132	20 7 24.4	10.719
17	18 21 34.11	2.6993	26 10 25.2	4.036	17	20 22 4.97	2.3046	19 56 38.3	10.817
18	18 24 15.88	2.6928	26 6 17.5	4.219	18	20 24 22.99	2.2960	19 45 46.4	10.912
19	18 26 57.25	2.6863	26 1 58.9	4.401	19	20 26 40.49	2.2874	19 34 48.9	11.005
20	18 29 38.23	2.6797	25 57 29.4	4.582	20	20 28 57.48	2.2790	19 23 45.8	11.097
21	18 32 18.81	2.6729	25 52 49.1	4.761	21	20 31 13.97	2.2706	19 12 37.3	11.186
22	18 34 58.98	2.6659	25 47 58.1	4.938	22	20 33 29.95	2.2622	19 1 23.5	11.274
23	18 37 38.72	2.6588	25 42 56.5	5.113	23	20 35 45.43	2.2538	18 50 4.4	11.361
24	18 40 18.04	2.6517	25 37 44.5	5.287	24	20 38 0.41	2.2455	18 38 40.2	11.445
25	18 42 56.92	2.6443	S. 25 32 22.1	5.459	25	20 40 14.89	2.2372	S. 18 27 11.0	11.527

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.			Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.			Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.		
FRIDAY 21.							SUNDAY 23.								
0	h	m	s	"	"	"	0	h	m	s	"	"	"		
0	20	40	14.89	2.2374	S. 18	27 11.0	11.527	0	22	19	27.15	1.9270	S. 8	7 20.1	13.787
1	20	42	28.87	2.2290	18	15 36.9	11.609	1	22	21	22.64	1.9226	7	53 32.3	13.804
2	20	44	42.37	2.2209	18	3 57.9	11.689	2	22	23	17.87	1.9186	7	39 43.6	13.820
3	20	46	55.38	2.2128	17	52 14.2	11.767	3	22	25	12.83	1.9139	7	25 53.9	13.836
4	20	49	7.91	2.2048	17	40 25.9	11.843	4	22	27	7.54	1.9098	7	12 3.3	13.850
5	20	51	19.96	2.1968	17	28 33.0	11.918	5	22	29	2.01	1.9058	6	58 11.9	13.863
6	20	53	31.53	2.1889	17	16 35.7	11.991	6	22	30	56.24	1.9018	6	44 19.7	13.876
7	20	55	42.63	2.1811	17	4 34.1	12.062	7	22	32	50.23	1.8979	6	30 26.8	13.887
8	20	57	53.26	2.1733	16	52 28.3	12.132	8	22	34	43.99	1.8941	6	16 33.2	13.898
9	21	0	3.14	2.1657	16	40 18.3	12.200	9	22	36	37.52	1.8903	6	2 39.0	13.908
10	21	2	13.43	2.1580	16	28 4.3	12.266	10	22	38	30.83	1.8867	5	48 44.3	13.917
11	21	4	22.39	2.1504	16	15 46.4	12.331	11	22	40	23.93	1.8832	5	34 49.0	13.925
12	21	6	31.19	2.1430	16	3 24.6	12.394	12	22	42	16.81	1.8796	5	20 53.3	13.932
13	21	8	39.55	2.1356	15	50 59.1	12.456	13	22	44	9.48	1.8763	5	6 57.2	13.938
14	21	10	47.46	2.1282	15	38 29.9	12.517	14	22	46	1.96	1.8731	4	53 0.8	13.943
15	21	12	54.93	2.1209	15	25 57.1	12.575	15	22	47	54.25	1.8699	4	39 4.0	13.948
16	21	15	1.97	2.1137	15	13 20.9	12.632	16	22	49	46.35	1.8667	4	25 7.0	13.954
17	21	17	8.58	2.1066	15	0 41.3	12.688	17	22	51	38.26	1.8637	4	11 9.9	13.954
18	21	19	14.76	2.0995	14	47 58.3	12.743	18	22	53	29.99	1.8607	3	57 12.6	13.956
19	21	21	20.52	2.0926	14	35 12.1	12.796	19	22	55	21.55	1.8579	3	43 15.2	13.957
20	21	23	25.87	2.0857	14	22 22.8	12.847	20	22	57	12.94	1.8551	3	29 17.8	13.957
21	21	25	30.81	2.0789	14	9 30.4	12.898	21	22	59	4.16	1.8523	3	15 20.4	13.957
22	21	27	35.34	2.0722	13	56 35.0	12.947	22	23	0	55.22	1.8497	3	1 23.0	13.955
23	21	29	39.47	2.0655	S. 13	43 36.7	12.994	23	23	2	46.13	1.8472	S. 2	47 25.8	13.953
SATURDAY 22.							MONDAY 24.								
0	21	31	43.20	2.0589	S. 13	30 35.7	13.040	0	23	4	36.88	1.8447	S. 2	33 28.7	13.950
1	21	33	46.54	2.0525	13	17 31.9	13.096	1	23	6	27.49	1.8423	2	19 31.8	13.946
2	21	35	49.50	2.0462	13	4 25.4	13.159	2	23	8	17.96	1.8401	2	5 35.2	13.942
3	21	37	52.08	2.0398	12	51 16.4	13.171	3	23	10	8.30	1.8379	1	51 38.8	13.937
4	21	39	54.28	2.0336	12	38 4.9	13.212	4	23	11	58.51	1.8357	1	37 42.8	13.930
5	21	41	56.11	2.0274	12	24 50.9	13.252	5	23	13	48.59	1.8336	1	23 47.2	13.923
6	21	43	57.57	2.0213	12	11 34.6	13.291	6	23	15	38.54	1.8316	1	9 52.0	13.916
7	21	45	58.67	2.0154	11	58 16.0	13.328	7	23	17	28.38	1.8298	0	55 57.3	13.907
8	21	47	59.42	2.0095	11	44 55.2	13.364	8	23	19	18.11	1.8280	0	42 3.2	13.898
9	21	49	59.81	2.0037	11	31 32.3	13.398	9	23	21	7.74	1.8262	0	28 9.6	13.888
10	21	51	59.86	1.9980	11	18 7.4	13.432	10	23	22	57.26	1.8246	0	14 16.6	13.877
11	21	53	59.57	1.9923	11	4 40.4	13.466	11	23	24	46.69	1.8230	S. 0	0 24.3	13.866
12	21	55	58.94	1.9867	10	51 11.5	13.497	12	23	26	36.02	1.8215	N. 0	13 27.3	13.853
13	21	57	57.98	1.9813	10	37 40.7	13.527	13	23	28	25.27	1.8202	0	27 18.1	13.840
14	21	59	56.70	1.9760	10	24 8.2	13.556	14	23	30	14.44	1.8188	0	41 8.1	13.827
15	22	1	55.10	1.9707	10	10 34.0	13.584	15	23	32	3.52	1.8174	0	54 57.4	13.814
16	22	3	53.18	1.9655	9	56 58.1	13.611	16	23	33	52.53	1.8163	1	8 45.8	13.799
17	22	5	50.96	1.9604	9	43 20.7	13.636	17	23	35	41.48	1.8152	1	22 33.2	13.783
18	22	7	48.43	1.9553	9	29 41.8	13.660	18	23	37	30.36	1.8142	1	36 19.7	13.767
19	22	9	45.60	1.9504	9	16 1.5	13.684	19	23	39	19.18	1.8132	1	50 5.2	13.749
20	22	11	42.48	1.9456	9	2 19.7	13.707	20	23	41	7.95	1.8124	2	3 49.6	13.731
21	22	13	39.07	1.9408	8	48 36.6	13.728	21	23	42	56.67	1.8117	2	17 32.9	13.712
22	22	15	35.37	1.9361	8	34 52.3	13.748	22	23	44	45.35	1.8109	2	31 15.1	13.693
23	22	17	31.40	1.9315	8	21 6.8	13.768	23	23	46	33.98	1.8102	2	44 56.1	13.673
24	22	19	27.15	1.9270	S. 8	7 20.1	13.787	24	23	48	22.57	1.8096	N. 2	58 35.9	13.653

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 25.					THURSDAY 27.				
0	23 48 22.57	1.8096	N. 2 58 35.9	13.653	0	1 15 54.28	1.8622	N. 13 17 10.3	11.857
1	23 50 11.13	1.8092	3 12 14.5	13.631	1	1 17 46.09	1.8647	13 29 0.1	11.802
2	23 51 59.67	1.8088	3 25 51.7	13.609	2	1 19 38.05	1.8673	13 40 46.6	11.747
3	23 53 48.18	1.8084	3 39 27.6	13.587	3	1 21 30.17	1.8700	13 52 29.7	11.691
4	23 55 36.67	1.8081	3 53 2.1	13.563	4	1 23 22.45	1.8727	14 4 9.5	11.634
5	23 57 25.15	1.8079	4 6 35.2	13.539	5	1 25 14.90	1.8755	14 15 45.8	11.577
6	23 59 13.62	1.8077	4 20 6.8	13.514	6	1 27 7.51	1.8783	14 27 18.7	11.518
7	0 1 2.08	1.8077	4 33 36.9	13.488	7	1 29 00.30	1.8812	14 38 48.0	11.459
8	0 2 50.54	1.8077	4 47 5.4	13.462	8	1 30 53.26	1.8841	14 50 13.8	11.400
9	0 4 39.00	1.8078	5 0 32.4	13.436	9	1 32 46.39	1.8870	15 1 36.0	11.340
10	0 6 27.47	1.8079	5 13 57.7	13.409	10	1 34 39.70	1.8901	15 12 54.6	11.278
11	0 8 15.95	1.8082	5 27 21.4	13.381	11	1 36 33.20	1.8932	15 24 9.4	11.216
12	0 10 4.45	1.8085	5 40 43.4	13.352	12	1 38 26.88	1.8963	15 35 20.5	11.153
13	0 11 52.97	1.8088	5 54 3.6	13.322	13	1 40 20.75	1.8994	15 46 27.8	11.090
14	0 13 41.51	1.8092	6 7 22.0	13.292	14	1 42 14.81	1.9025	15 57 31.3	11.026
15	0 15 30.08	1.8097	6 20 38.6	13.261	15	1 44 9.05	1.9057	16 8 30.9	10.961
16	0 17 18.68	1.8103	6 33 53.3	13.229	16	1 46 3.49	1.9090	16 19 26.6	10.895
17	0 19 7.32	1.8110	6 47 6.1	13.197	17	1 47 58.13	1.9123	16 30 18.3	10.828
18	0 20 56.00	1.8117	7 0 17.0	13.165	18	1 49 52.97	1.9157	16 41 6.0	10.761
19	0 22 44.73	1.8125	7 13 25.9	13.131	19	1 51 48.01	1.9191	16 51 49.6	10.693
20	0 24 33.50	1.8133	7 26 32.7	13.096	20	1 53 43.26	1.9225	17 2 29.1	10.624
21	0 26 22.32	1.8142	7 39 37.4	13.061	21	1 55 38.71	1.9259	17 13 4.5	10.555
22	0 28 11.20	1.8152	7 52 40.0	13.026	22	1 57 34.37	1.9294	17 23 35.7	10.484
23	0 30 0.14	1.8163	N. 8 5 40.5	12.990	23	1 59 30.24	1.9329	N. 17 34 2.6	10.412
WEDNESDAY 26.					FRIDAY 28.				
0	0 31 49.15	1.8174	N. 8 18 38.8	12.952	0	2 1 26.32	1.9363	N. 17 44 25.2	10.340
1	0 33 38.23	1.8186	8 31 34.8	12.914	1	2 3 22.62	1.9401	17 54 43.4	10.268
2	0 35 27.38	1.8198	8 44 28.5	12.876	2	2 5 19.13	1.9437	18 4 57.3	10.195
3	0 37 16.60	1.8210	8 57 20.0	12.838	3	2 7 15.86	1.9473	18 15 6.8	10.121
4	0 39 5.90	1.8224	9 10 9.1	12.798	4	2 9 12.81	1.9510	18 25 11.8	10.045
5	0 40 55.29	1.8238	9 22 55.8	12.757	5	2 11 9.98	1.9547	18 35 12.2	9.969
6	0 42 44.76	1.8252	9 35 40.0	12.716	6	2 13 7.38	1.9585	18 45 8.1	9.892
7	0 44 34.32	1.8268	9 48 21.7	12.674	7	2 15 5.00	1.9622	18 54 59.3	9.814
8	0 46 23.98	1.8285	10 1 0.9	12.632	8	2 17 2.85	1.9660	19 4 45.8	9.735
9	0 48 13.74	1.8302	10 13 37.6	12.590	9	2 19 0.92	1.9698	19 14 27.6	9.657
10	0 50 3.60	1.8319	10 26 11.7	12.546	10	2 20 59.22	1.9737	19 24 4.6	9.577
11	0 51 53.56	1.8336	10 38 43.1	12.500	11	2 22 57.76	1.9776	19 33 36.8	9.497
12	0 53 43.63	1.8355	10 51 11.7	12.454	12	2 24 56.53	1.9814	19 43 4.2	9.415
13	0 55 33.82	1.8374	11 3 37.6	12.409	13	2 26 55.53	1.9853	19 52 26.6	9.332
14	0 57 24.12	1.8393	11 16 0.8	12.363	14	2 28 54.77	1.9892	20 1 44.0	9.249
15	0 59 14.54	1.8413	11 28 21.2	12.316	15	2 30 54.24	1.9932	20 10 56.5	9.166
16	1 1 5.08	1.8434	11 40 38.7	12.267	16	2 32 53.95	1.9972	20 20 3.9	9.080
17	1 2 55.75	1.8456	11 52 53.3	12.218	17	2 34 53.90	2.0011	20 29 6.1	8.994
18	1 4 46.55	1.8478	12 5 4.9	12.169	18	2 36 54.08	2.0050	20 38 3.2	8.908
19	1 6 37.49	1.8501	12 17 13.6	12.119	19	2 38 54.50	2.0091	20 46 55.1	8.821
20	1 8 28.56	1.8524	12 29 19.2	12.068	20	2 40 55.17	2.0131	20 55 41.7	8.733
21	1 10 19.77	1.8548	12 41 21.7	12.016	21	2 42 56.07	2.0170	21 4 23.0	8.644
22	1 12 11.13	1.8572	12 53 21.1	11.963	22	2 44 57.21	2.0210	21 12 59.0	8.555
23	1 14 2.63	1.8596	13 5 17.3	11.910	23	2 46 58.59	2.0251	21 21 29.6	8.464
24	1 15 54.28	1.8622	N. 13 17 10.3	11.857	24	2 49 0.22	2.0292	N. 21 29 54.7	8.373

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.																								
SATURDAY 29.					MONDAY 31.																												
0	2 49 0.22	2.0292	N. 21 29 54.7	8.573	0	4 30 49.31	2.2017	N. 26 12 0.6	3.109																								
1	2 51 2.09	2.0332	21 38 14.3	8.281	1	4 33 1.49	2.2043	26 15 3.4	2.984																								
2	2 53 4.20	2.0372	21 46 28.4	8.188	2	4 35 13.82	2.2068	26 17 58.7	2.858																								
3	2 55 6.55	2.0412	21 54 36.9	8.094	3	4 37 26.31	2.2093	26 20 46.4	2.732																								
4	2 57 9.15	2.0453	22 2 39.7	7.999	4	4 39 38.94	2.2117	26 23 26.5	2.605																								
5	2 59 11.99	2.0493	22 10 36.8	7.904	5	4 41 51.71	2.2140	26 25 59.0	2.478																								
6	3 1 15.07	2.0533	22 18 28.2	7.808	6	4 44 4.62	2.2162	26 28 23.9	2.351																								
7	3 3 18.39	2.0574	22 26 13.8	7.711	7	4 46 17.66	2.2184	26 30 41.1	2.222																								
8	3 5 21.96	2.0615	22 33 53.5	7.613	8	4 48 30.83	2.2205	26 32 50.6	2.093																								
9	3 7 25.77	2.0655	22 41 27.4	7.515	9	4 50 44.12	2.2225	26 34 52.3	1.964																								
10	3 9 29.82	2.0695	22 48 55.3	7.415	10	4 52 57.53	2.2245	26 36 46.3	1.835																								
11	3 11 34.11	2.0735	22 56 17.2	7.316	11	4 55 11.06	2.2265	26 38 32.5	1.706																								
12	3 13 38.64	2.0775	23 3 33.2	7.216	12	4 57 24.71	2.2285	26 40 11.0	1.576																								
13	3 15 43.41	2.0815	23 10 43.1	7.114	13	4 59 38.46	2.2300	26 41 41.6	1.445																								
14	3 17 48.42	2.0855	23 17 46.8	7.011	14	5 1 52.31	2.2317	26 43 4.4	1.315																								
15	3 19 53.67	2.0894	23 24 44.4	6.908	15	5 4 6.26	2.2332	26 44 19.4	1.184																								
16	3 21 59.15	2.0933	23 31 35.8	6.804	16	5 6 20.30	2.2347	26 45 26.5	1.052																								
17	3 24 4.87	2.0973	23 38 20.9	6.699	17	5 8 34.43	2.2362	26 46 25.7	0.921																								
18	3 26 10.83	2.1012	23 44 59.7	6.594	18	5 10 48.64	2.2375	26 47 17.0	0.789																								
19	3 28 17.02	2.1051	23 51 32.2	6.487	19	5 13 2.93	2.2388	26 48 0.4	0.657																								
20	3 30 23.44	2.1089	23 57 58.2	6.380	20	5 15 17.30	2.2401	26 48 35.8	0.524																								
21	3 32 30.09	2.1128	24 4 17.8	6.272	21	5 17 31.74	2.2412	26 49 3.3	0.392																								
22	3 34 36.97	2.1166	24 10 30.9	6.164	22	5 19 46.25	2.2422	26 49 22.9	0.260																								
23	3 36 44.08	2.1203	N. 24 16 37.5	6.056	23	5 22 0.81	2.2432	N. 26 49 34.5	+ 0.127																								
SUNDAY 30.					TUESDAY, JUNE 1.																												
0	3 38 51.41	2.1241	N. 24 22 37.6	5.946	0	5 24 15.43	2.2441	N. 26 49 38.1	- 0.007																								
1	3 40 58.97	2.1276	24 28 31.0	5.834	PHASES OF THE MOON.																												
2	3 43 6.75	2.1315	24 34 17.7	5.723																													
3	3 45 14.75	2.1352	24 39 57.8	5.611																													
4	3 47 22.97	2.1388	24 45 31.1	5.498																													
5	3 49 31.40	2.1423	24 50 57.6	5.386	<table><tr><td></td><td>d</td><td>h</td><td>m</td></tr><tr><td>● New Moon May</td><td>1</td><td>8</td><td>46.3</td></tr><tr><td>☾ First Quarter</td><td>9</td><td>9</td><td>36.7</td></tr><tr><td>○ Full Moon</td><td>16</td><td>1</td><td>54.5</td></tr><tr><td>☾ Last Quarter</td><td>22</td><td>21</td><td>34.4</td></tr><tr><td>● New Moon</td><td>31</td><td>0</td><td>25.6</td></tr></table>						d	h	m	● New Moon May	1	8	46.3	☾ First Quarter	9	9	36.7	○ Full Moon	16	1	54.5	☾ Last Quarter	22	21	34.4	● New Moon	31	0	25.6
	d	h	m																														
● New Moon May	1	8	46.3																														
☾ First Quarter	9	9	36.7																														
○ Full Moon	16	1	54.5																														
☾ Last Quarter	22	21	34.4																														
● New Moon	31	0	25.6																														
6	3 51 40.05	2.1459	24 56 17.4	5.272	<table><tr><td></td><td>d</td><td>h</td></tr><tr><td>☾ Apogee May</td><td>1</td><td>19.4</td></tr><tr><td>☾ Perigee</td><td>15</td><td>19.2</td></tr><tr><td>☾ Apogee</td><td>28</td><td>22.8</td></tr></table>						d	h	☾ Apogee May	1	19.4	☾ Perigee	15	19.2	☾ Apogee	28	22.8												
	d	h																															
☾ Apogee May	1	19.4																															
☾ Perigee	15	19.2																															
☾ Apogee	28	22.8																															
7	3 53 48.91	2.1494	25 1 30.3	5.157																													
8	3 55 57.98	2.1529	25 6 36.2	5.041																													
9	3 58 7.26	2.1563	25 11 35.2	4.925																													
10	4 0 16.74	2.1597	25 16 27.2	4.808																													
11	4 2 26.42	2.1631	25 21 12.2	4.691																													
12	4 4 36.31	2.1664	25 25 50.1	4.573																													
13	4 6 46.39	2.1696	25 30 20.9	4.454																													
14	4 8 56.66	2.1728	25 34 44.6	4.335																													
15	4 11 7.12	2.1759	25 39 1.1	4.215																													
16	4 13 17.77	2.1790	25 43 10.4	4.094																													
17	4 15 28.60	2.1821	25 47 12.4	3.973																													
18	4 17 39.62	2.1851	25 51 7.1	3.851																													
19	4 19 50.81	2.1879	25 54 54.5	3.728																													
20	4 22 2.17	2.1908	25 58 34.5	3.606																													
21	4 24 13.71	2.1937	26 2 7.2	3.483																													
22	4 26 25.42	2.1965	26 5 32.5	3.359																													
23	4 28 37.29	2.1991	26 8 50.3	3.234																													
24	4 30 49.31	2.2017	N. 26 12 0.6	3.109																													

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
3	SUN W.	18 23 23	3602	19 41 55	3579	21 0 52	3561	22 20 9	3545
	Pollux E.	50 29 4	3099	49 0 53	3098	47 32 41	3097	46 4 28	3097
	MARS E.	50 34 18	3274	49 9 36	3272	47 44 52	3270	46 20 5	3268
	Regulus E.	87 17 27	3071	85 48 42	3070	84 19 56	3068	82 51 7	3066
	JUPITER E.	89 6 33	3083	87 38 3	3081	86 9 30	3079	84 40 55	3078
4	SUN W.	29 0 19	3488	30 20 57	3478	31 41 46	3470	33 2 44	3461
	Pollux E.	38 43 15	3095	37 14 59	3094	35 46 42	3094	34 18 25	3094
	MARS E.	39 15 28	3253	37 50 22	3250	36 25 12	3246	34 59 57	3242
	Regulus E.	75 26 18	3052	73 57 9	3048	72 27 56	3044	70 58 38	3041
	JUPITER E.	77 17 19	3065	75 48 26	3060	74 19 28	3057	72 50 26	3054
5	SUN W.	39 49 56	3420	41 11 50	3412	42 33 53	3403	43 56 6	3394
	MARS E.	27 52 22	3217	26 26 33	3211	25 0 37	3205	23 34 34	3198
	Regulus E.	63 30 50	3017	62 0 58	3011	60 30 59	3005	59 0 53	3000
	JUPITER E.	65 24 1	3030	63 54 26	3026	62 24 45	3020	60 54 57	3014
	Spica E.	117 34 3	3080	116 4 15	3074	114 34 19	3068	113 4 16	3061
6	SUN W.	50 49 40	3350	52 12 54	3340	53 36 19	3330	54 59 56	3319
	Regulus E.	51 28 24	2965	49 57 27	2958	48 26 21	2949	46 55 4	2941
	JUPITER E.	53 24 2	2981	51 53 25	2973	50 22 39	2966	48 51 44	2958
	Spica E.	105 31 55	2965	104 0 59	2958	102 29 53	2950	100 58 37	2940
7	SUN W.	62 1 7	3264	63 26 1	3252	64 51 9	3240	66 16 31	3226
	Regulus E.	39 15 54	2894	37 43 28	2884	36 10 49	2874	34 37 57	2864
	JUPITER E.	41 14 26	2913	39 42 24	2903	38 10 9	2894	36 37 42	2884
	Spica E.	93 19 20	2892	91 46 51	2882	90 14 9	2870	88 41 12	2859
8	SUN W.	73 27 19	3158	74 54 18	3143	76 21 35	3129	77 49 10	3113
	Spica E.	80 52 43	2798	79 18 13	2785	77 43 25	2771	76 8 19	2757
	SATURN E.	116 33 58	2808	114 59 41	2794	113 25 5	2780	111 50 11	2765
9	SUN W.	85 11 51	3033	86 41 23	3015	88 11 17	2998	89 41 32	2981
	Pollux W.	23 31 33	2782	25 6 24	2755	26 41 51	2729	28 17 52	2704
	MARS W.	19 25 23	2869	20 58 22	2852	22 31 42	2835	24 5 24	2818
	Spica E.	68 8 10	2684	66 31 9	2669	64 53 47	2653	63 16 4	2638
	SATURN E.	103 50 42	2689	102 13 47	2672	100 36 30	2657	98 58 52	2640
	Antares E.	113 56 24	2678	112 19 15	2663	110 41 45	2646	109 3 53	2631
10	SUN W.	97 18 21	2891	98 50 52	2872	100 23 47	2854	101 57 5	2835
	Pollux W.	36 25 44	2595	38 4 46	2574	39 44 17	2553	41 24 16	2533
	MARS W.	31 59 29	2731	33 35 28	2713	35 11 50	2695	36 48 36	2677
	Spica E.	55 1 59	2555	53 22 2	2538	51 41 41	2520	50 0 56	2504
	SATURN E.	90 45 2	2556	89 5 6	2539	87 24 47	2522	85 44 4	2504
	Antares E.	100 49 1	2547	99 8 53	2530	97 28 21	2512	95 47 25	2494
11	SUN W.	109 49 46	2740	111 25 33	2721	113 1 45	2702	114 38 22	2684
	Pollux W.	49 51 10	2435	51 33 55	2415	53 17 8	2396	55 0 48	2377
	MARS W.	44 58 40	2584	46 37 57	2566	48 17 39	2547	49 57 47	2529
	Spica E.	41 31 13	2417	39 48 3	2401	38 4 29	2383	36 20 30	2367
	SATURN E.	77 14 23	2417	75 31 13	2400	73 47 38	2383	72 3 39	2366
	Antares E.	87 16 31	2405	85 33 4	2388	83 49 12	2370	82 4 54	2352

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		° ' "		° ' "		° ' "		° ' "	
3	SUN W.	23 39 43	3531	24 59 33	3519	26 19 36	3507	27 39 52	3497
	Pollux E.	44 36 15	3096	43 8 1	3096	41 39 46	3096	40 11 31	3095
	MARS E.	44 55 16	3265	43 30 24	3265	42 5 29	3239	40 40 30	3237
	Regulus E.	81 22 16	3064	79 53 22	3060	78 24 24	3058	76 55 23	3055
	JUPITER E.	83 12 18	3075	81 43 38	3073	80 14 55	3070	78 46 9	3067
4	SUN W.	34 23 52	3453	35 45 9	3444	37 6 36	3437	38 28 11	3428
	Pollux E.	32 50 8	3095	31 21 52	3096	29 53 38	3097	28 25 25	3100
	MARS E.	33 34 37	3237	32 9 12	3232	30 43 41	3228	29 18 5	3222
	Regulus E.	69 29 16	3036	67 59 48	3032	66 30 15	3027	65 0 36	3022
	JUPITER E.	71 21 20	3050	69 52 9	3045	68 22 52	3041	66 53 30	3035
5	SUN W.	45 18 29	3386	46 41 1	3377	48 3 44	3368	49 26 37	3359
	MARS E.	22 8 23	3192	20 42 4	3185	19 15 37	3178	17 49 1	3171
	Regulus E.	57 30 40	2993	56 0 19	2986	54 29 49	2980	52 59 11	2973
	JUPITER E.	59 25 2	3009	57 55 0	3001	56 24 49	2995	54 54 30	2988
	Spica E.	111 34 5	2995	110 3 46	2988	108 33 18	2981	107 2 41	2973
6	SUN W.	56 23 45	3309	57 47 46	3298	59 12 0	3287	60 36 27	3276
	Regulus E.	45 23 37	2932	43 51 59	2923	42 20 9	2914	40 48 8	2904
	JUPITER E.	47 20 38	2950	45 49 22	2941	44 17 55	2931	42 46 16	2923
	Spica E.	99 27 9	2931	97 55 30	2922	96 23 39	2912	94 51 36	2902
7	SUN W.	67 42 9	3214	69 8 2	3200	70 34 11	3186	72 0 37	3173
	Regulus E.	33 4 52	2853	31 31 33	2842	29 57 59	2831	28 24 11	2818
	JUPITER E.	35 5 3	2874	33 32 11	2863	31 59 5	2853	30 25 46	2842
	Spica E.	87 8 1	2848	85 34 35	2836	84 0 54	2824	82 26 57	2811
8	SUN W.	79 17 4	3098	80 45 16	3082	82 13 48	3066	83 42 39	3049
	Spica E.	74 32 55	2744	72 57 13	2729	71 21 11	2714	69 44 50	2700
	SATURN E.	110 14 57	2750	108 39 24	2735	107 3 30	2719	105 27 16	2704
9	SUN W.	91 12 9	2965	92 43 8	2946	94 14 29	2927	95 46 13	2909
	Pollux W.	29 54 26	2681	31 31 31	2659	33 9 6	2638	34 47 10	2615
	MARS W.	25 39 28	2801	27 13 54	2784	28 48 43	2767	30 23 54	2749
	Spica E.	61 38 0	2621	59 59 34	2604	58 20 45	2588	56 41 33	2572
	SATURN E.	97 20 51	2624	95 42 28	2607	94 3 42	2591	92 24 34	2573
	Antares E.	107 25 40	2614	105 47 4	2598	104 8 6	2581	102 28 45	2564
10	SUN W.	103 30 48	2816	105 4 55	2797	106 39 27	2778	108 14 24	2759
	Pollux W.	43 4 44	2513	44 45 39	2493	46 27 2	2474	48 8 52	2454
	MARS W.	38 25 47	2659	40 3 22	2640	41 41 23	2621	43 19 49	2603
	Spica E.	48 19 48	2487	46 38 16	2469	44 56 19	2452	43 13 58	2435
	SATURN E.	84 2 57	2487	82 21 25	2470	80 39 29	2452	78 57 8	2435
	Antares E.	94 6 4	2477	92 24 19	2459	90 42 8	2441	88 59 32	2424
11	SUN W.	116 15 24	2665	117 52 51	2646	119 30 43	2628	121 9 0	2610
	Pollux W.	56 44 56	2358	58 29 31	2340	60 14 32	2322	62 0 0	2304
	MARS W.	51 38 20	2510	53 19 19	2492	55 0 44	2473	56 42 35	2455
	Spica E.	34 36 8	2350	32 51 22	2335	31 6 13	2319	29 20 41	2304
	SATURN E.	70 19 15	2349	68 34 27	2332	66 49 14	2316	65 3 38	2300
	Antares E.	80 20 10	2334	78 35 0	2317	76 49 25	2299	75 3 24	2281

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12	Pollux W.	63 45 54	2285	65 32 15	2268	67 19 1	2251	69 6 13	2233
	MARS W.	58 24 51	2438	60 7 32	2419	61 50 39	2402	63 34 11	2385
	Regulus W.	26 43 53	2277	28 30 26	2260	30 17 25	2241	32 4 51	2224
	JUPITER W.	24 41 24	2312	26 27 6	2291	28 13 19	2271	30 0 1	2252
	SATURN E.	63 17 38	2284	61 31 15	2268	59 44 29	2253	57 57 20	2239
	Antares E.	73 16 57	2264	71 30 5	2247	69 42 48	2231	67 55 6	2214
13	Pollux W.	78 8 24	2154	79 58 1	2139	81 48 0	2125	83 38 21	2112
	MARS W.	72 17 50	2304	74 3 43	2289	75 49 58	2275	77 36 34	2261
	Regulus W.	41 8 23	2142	42 58 18	2128	44 48 35	2113	46 39 14	2099
	JUPITER W.	39 0 18	2166	40 49 37	2151	42 39 19	2136	44 29 24	2122
	Antares E.	58 50 32	2136	57 0 28	2122	55 10 2	2107	53 19 14	2094
	α Aquilæ E.	110 26 20	2254	108 53 2	2244	107 19 5	2236	105 44 32	2226
14	Pollux W.	92 54 59	2052	94 47 12	2042	96 39 40	2033	98 32 23	2023
	MARS W.	86 34 31	2200	88 22 59	2189	90 11 43	2179	92 0 42	2170
	Regulus W.	55 57 39	2039	57 50 4	2028	59 42 54	2019	61 35 59	2010
	JUPITER W.	53 44 55	2060	55 36 56	2049	57 29 14	2039	59 21 47	2031
	Antares E.	44 0 21	2035	42 7 41	2025	40 14 45	2015	38 21 34	2007
	α Aquilæ E.	97 44 1	2269	96 6 39	2254	94 28 57	2241	92 50 58	2230
15	MARS W.	101 8 39	2136	102 58 43	2122	104 48 54	2108	106 39 11	2095
	Regulus W.	71 4 28	1977	72 58 39	1972	74 52 58	1968	76 47 22	1965
	JUPITER W.	68 47 38	1996	70 41 18	1992	72 35 5	1988	74 28 58	1986
	α Aquilæ E.	84 38 11	2204	82 59 22	2205	81 20 34	2208	79 41 50	2212
	Fomalhaut E.	109 24 48	2378	107 40 42	2366	105 56 18	2355	104 11 38	2345
16	Regulus W.	86 20 6	1963	88 14 39	1965	90 9 8	1968	92 3 33	1972
	JUPITER W.	83 59 3	1984	85 53 3	1986	87 47 0	1989	89 40 52	1992
	Spica W.	32 19 45	1977	34 13 55	1977	36 8 5	1979	38 2 12	1981
	α Aquilæ E.	71 30 50	2272	69 53 33	2262	68 16 42	2254	66 40 21	2246
	Fomalhaut E.	95 25 45	2324	93 40 21	2324	91 54 57	2326	90 9 36	2331
	α Pegasi E.	117 23 25	2175	115 34 20	2170	113 45 7	2167	111 55 49	2165
17	Regulus W.	101 33 47	2001	103 27 19	2009	105 20 39	2018	107 13 45	2028
	JUPITER W.	99 8 22	2023	101 1 21	2031	102 54 7	2040	104 46 39	2050
	Spica W.	47 31 23	2007	49 24 46	2015	51 17 57	2023	53 10 55	2032
	α Aquilæ E.	58 48 26	2019	57 16 31	2028	55 45 38	2021	54 15 51	2020
	Fomalhaut E.	81 24 54	2371	79 40 37	2383	77 56 38	2398	76 13 0	2414
	α Pegasi E.	102 49 21	2176	101 0 17	2182	99 11 22	2188	97 22 37	2197
18	Spica W.	62 31 49	2068	64 23 6	2102	66 14 2	2115	68 4 38	2130
	Antares W.	16 40 7	2083	18 31 33	2096	20 22 39	2110	22 13 23	2124
	Fomalhaut E.	67 41 15	2517	66 0 26	2544	64 20 14	2572	62 40 40	2602
	α Pegasi E.	88 22 26	2252	86 35 16	2266	84 48 26	2281	83 1 58	2297
19	Spica W.	77 11 58	2208	79 0 14	2225	80 48 5	2242	82 35 30	2259
	SATURN W.	42 33 31	2250	44 20 44	2263	46 7 38	2276	47 54 13	2289
	Antares W.	31 21 25	2202	33 9 49	2219	34 57 48	2237	36 45 21	2253
	Fomalhaut E.	54 34 5	2788	52 59 21	2833	51 25 36	2882	49 52 54	2935
	α Pegasi E.	74 15 49	2387	72 31 56	2408	70 48 33	2429	69 5 40	2451
	VENUS E.	110 47 52	2208	108 59 37	2227	107 11 50	2246	105 24 31	2265

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		° ' "		° ' "		° ' "		° ' "	
12	Pollux W.	70 53 51	2217	72 41 53	2200	74 30 20	2185	76 19 10	2169
	MARS W.	65 18 7	2368	67 2 28	2352	68 47 12	2335	70 32 20	2320
	Regulus W.	33 52 43	2206	35 41 1	2190	37 29 44	2173	39 18 52	2158
	JUPITER W.	31 47 11	2233	33 34 49	2216	35 22 53	2198	37 11 23	2182
	SATURN E.	56 9 50	2225	54 21 59	2210	52 33 47	2198	50 45 16	2186
	Antares E.	66 6 59	2197	64 18 27	2182	62 29 32	2166	60 40 13	2151
13	Pollux W.	85 29 2	2099	87 20 3	2086	89 11 24	2074	91 3 3	2063
	MARS W.	79 23 31	2247	81 10 48	2235	82 58 24	2222	84 46 19	2208
	Regulus W.	48 30 14	2086	50 21 34	2073	52 13 14	2061	54 5 13	2050
	JUPITER W.	46 19 50	2108	48 10 37	2095	50 1 44	2082	51 53 11	2071
	Antares E.	51 28 6	2081	49 36 38	2068	47 44 50	2057	45 52 44	2046
	α Aquilæ E.	104 9 24	2745	102 33 44	2724	100 57 36	2704	99 21 1	2685
14	Pollux W.	100 25 19	2017	102 18 27	2009	104 11 47	2003	106 5 17	1998
	MARS W.	93 49 54	2162	95 39 19	2154	97 28 56	2147	99 18 43	2141
	Regulus W.	63 29 17	2002	65 22 48	1994	67 16 31	1987	69 10 25	1982
	JUPITER W.	61 14 33	2023	63 7 32	2014	65 0 44	2008	66 54 6	2001
	Antares E.	36 28 10	1998	34 34 33	1991	32 40 44	1984	30 46 45	1979
	α Aquilæ E.	91 12 44	2621	89 34 18	2614	87 55 42	2609	86 16 59	2605
15	MARS W.	108 29 32	2122	110 19 57	2122	112 10 23	2121	114 0 50	2122
	Regulus W.	78 41 51	1963	80 36 23	1962	82 30 57	1962	84 25 32	1962
	JUPITER W.	76 22 55	1983	78 16 56	1982	80 10 58	1982	82 5 1	1982
	α Aquilæ E.	78 3 12	2620	76 24 44	2629	74 46 29	2641	73 8 30	2653
	Fomalhaut E.	102 26 44	2338	100 41 40	2332	98 56 27	2328	97 11 8	2325
16	Regulus W.	93 57 52	1976	95 52 4	1981	97 46 8	1987	99 40 3	1994
	JUPITER W.	91 34 39	1996	93 28 19	2002	95 21 50	2009	97 15 11	2015
	Spica W.	39 56 16	1985	41 50 14	1989	43 44 6	1994	45 37 49	2000
	α Aquilæ E.	65 4 34	2768	63 29 24	2801	61 54 57	2836	60 21 16	2876
	Fomalhaut E.	88 24 21	2335	86 39 13	2342	84 54 14	2350	83 9 27	2359
	α Pegasi E.	110 6 29	2165	108 17 8	2165	106 27 48	2168	104 38 32	2171
17	Regulus W.	109 6 35	2039	110 59 9	2049	112 51 27	2061	114 43 26	2073
	JUPITER W.	106 38 56	2061	108 30 56	2072	110 22 39	2083	112 14 4	2096
	Spica W.	55 3 39	2042	56 56 7	2053	58 48 19	2064	60 40 13	2076
	α Aquilæ E.	52 47 17	2144	51 20 1	2215	49 54 10	2294	48 29 51	2380
	Fomalhaut E.	74 29 45	2431	72 46 54	2450	71 4 31	2471	69 22 37	2494
	α Pegasi E.	95 34 5	2206	93 45 46	2216	91 57 42	2227	90 9 55	2239
18	Spica W.	69 54 52	2144	71 44 44	2160	73 34 12	2175	75 23 17	2191
	Antares W.	24 3 46	2139	25 53 46	2154	27 43 23	2170	29 32 36	2186
	Fomalhaut E.	61 1 48	2634	59 23 39	2669	57 46 17	2706	56 9 45	2745
	α Pegasi E.	81 15 54	2313	79 30 14	2331	77 44 59	2348	76 0 10	2368
19	Spica W.	84 22 30	2277	86 9 4	2295	87 55 11	2313	89 40 51	2331
	SATURN W.	49 40 28	2304	51 26 21	2320	53 11 52	2335	54 57 0	2351
	Antares W.	38 32 29	2272	40 19 10	2289	42 5 25	2308	43 51 13	2326
	Fomalhaut E.	48 21 19	2991	46 50 55	3053	45 21 48	3119	43 54 1	3191
	α Pegasi E.	67 23 18	2474	65 41 28	2498	64 0 12	2522	62 19 30	2548
	VENUS E.	103 37 40	2284	101 51 17	2304	100 5 23	2324	98 19 58	2344

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		° ' "		° ' "		° ' "		° ' "	
20	Spica W.	91 26 5	2350	93 10 52	2368	94 55 12	2387	96 39 5	2405
	SATURN W.	56 41 45	2368	58 26 6	2385	60 10 2	2402	61 53 34	2419
	Antares W.	45 36 35	2345	47 21 29	2363	49 5 57	2382	50 49 58	2401
	α Pegasi E.	60 39 23	2374	58 59 52	2601	57 20 59	2609	55 42 44	2638
	VENUS E.	96 35 2	2364	94 50 35	2384	93 6 38	2405	91 23 10	2426
	α Arietis E.	102 21 42	2361	100 37 11	2380	98 53 7	2398	97 9 30	2417
	SUN E.	125 46 11	2677	124 9 0	2696	122 32 15	2716	120 55 56	2735
21	Spica W.	105 11 50	2300	106 53 3	2319	108 33 50	2338	110 14 11	2356
	SATURN W.	70 25 3	2307	72 6 6	2325	73 46 44	2343	75 26 57	2361
	Antares W.	59 23 20	2494	61 4 41	2513	62 45 36	2532	64 26 5	2550
	α Pegasi E.	47 41 45	2623	46 7 47	2661	44 34 38	2691	43 2 20	2642
	VENUS E.	82 53 12	2350	81 12 40	2359	79 32 36	2371	77 53 1	2391
	α Arietis E.	88 38 1	2310	86 57 2	2329	85 16 29	2348	83 36 22	2366
	SUN E.	113 0 46	2633	111 27 1	2653	109 53 42	2673	108 20 48	2692
22	SATURN W.	83 42 0	2649	85 19 49	2665	86 57 16	2682	88 34 20	2698
	Antares W.	72 42 15	2640	74 20 16	2657	75 57 54	2674	77 35 9	2691
	VENUS E.	69 42 4	2692	68 5 14	2713	66 28 51	2732	64 52 54	2751
	α Arietis E.	75 22 5	2657	73 44 27	2674	72 7 12	2692	70 30 21	2708
	SUN E.	100 42 26	2987	99 11 57	3005	97 41 51	3024	96 12 8	3041
23	SATURN W.	96 34 13	2779	98 9 9	2793	99 43 46	2808	101 18 3	2822
	Antares W.	85 35 56	2770	87 11 3	2785	88 45 51	2799	90 20 20	2814
	α Aquilæ W.	41 45 58	4500	42 49 50	4410	43 55 2	4333	45 1 24	4264
	VENUS E.	56 59 26	2845	55 25 57	2864	53 52 52	2882	52 20 10	2900
	α Arietis E.	62 31 38	2790	60 56 57	2806	59 22 37	2821	57 48 37	2836
	SUN E.	88 48 54	3127	87 21 17	3145	85 54 0	3159	84 27 1	3174
24	Antares W.	98 8 17	2899	99 41 3	2891	101 13 33	2903	102 45 48	2914
	α Aquilæ W.	50 47 20	4015	51 58 45	3979	53 10 45	3947	54 23 17	3919
	VENUS E.	44 42 15	2986	43 11 45	3003	41 41 36	3020	40 11 48	3036
	α Arietis E.	50 3 18	2907	48 31 8	2920	46 59 15	2933	45 27 38	2946
	SUN E.	77 16 36	3246	75 51 21	3259	74 26 21	3271	73 1 36	3283
25	α Aquilæ W.	60 32 17	3814	61 47 5	3799	63 2 8	3786	64 17 25	3773
	α Arietis E.	37 53 34	3008	36 23 31	3021	34 53 44	3033	33 24 12	3045
	SUN E.	66 1 16	3339	64 37 50	3349	63 14 35	3359	61 51 32	3368
26	α Aquilæ W.	70 36 38	3729	71 52 54	3723	73 9 17	3717	74 25 46	3712
	Fomalhaut W.	45 19 50	3793	46 34 59	3762	47 50 41	3734	49 6 52	3708
	SUN E.	54 58 43	3408	53 36 36	3415	52 14 36	3422	50 52 44	3429
27	α Aquilæ W.	80 49 13	3697	82 6 3	3696	83 22 54	3695	84 39 46	3694
	Fomalhaut W.	55 33 53	3610	56 52 16	3595	58 10 56	3581	59 29 51	3568
	α Pegasi W.	33 3 8	3666	34 20 31	3625	35 38 38	3589	36 57 24	3556
	SUN E.	44 5 6	3455	42 43 52	3460	41 22 43	3465	40 1 40	3470
28	α Aquilæ W.	91 4 8	3698	92 20 57	3700	93 37 44	3702	94 54 29	3706
	Fomalhaut W.	66 7 37	3516	67 27 43	3508	68 47 58	3500	70 8 22	3493
	α Pegasi W.	43 38 59	3439	45 0 31	3422	46 22 23	3406	47 44 33	3392
	SUN E.	33 17 35	3489	31 56 59	3494	30 36 28	3498	29 16 2	3503

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20.	Spica W.	98 22 32	2435	100 5 31	2443	101 48 4	2462	103 30 10	2481
	SATURN W.	63 36 42	2437	65 19 24	2454	67 1 42	2472	68 43 35	2489
	Antares W.	52 33 32	2419	54 16 39	2438	55 59 19	2457	57 41 33	2476
	α Pegasi E.	54 5 8	2689	52 28 13	2720	50 52 0	2753	49 16 30	2787
	VENUS E.	89 40 12	2446	87 57 43	2467	86 15 44	2487	84 34 13	2509
	α Arietis E.	95 26 19	2436	93 43 35	2454	92 1 17	2473	90 19 26	2492
	SUN E.	119 20 2	2754	117 44 34	2774	116 9 32	2794	114 34 56	2814
21	Spica W.	111 54 6	2574	113 33 36	2593	115 12 41	2611	116 51 21	2629
	SATURN W.	77 6 46	2578	78 46 11	2596	80 25 11	2614	82 3 47	2631
	Antares W.	66 6 9	2569	67 45 47	2586	69 25 1	2604	71 3 50	2622
	α Pegasi E.	41 30 55	2988	40 0 27	3036	38 30 59	3087	37 2 34	3143
	VENUS E.	76 13 54	2612	74 35 15	2632	72 57 4	2652	71 19 20	2673
	α Arietis E.	81 56 41	2585	80 17 25	2603	78 38 34	2621	77 0 7	2639
	SUN E.	106 48 19	2911	105 16 14	2931	103 44 34	2950	102 13 18	2969
22	SATURN W.	90 11 2	2715	91 47 22	2732	93 23 20	2747	94 58 57	2763
	Antares W.	79 12 1	2707	80 48 32	2723	82 24 41	2739	84 0 29	2755
	VENUS E.	63 17 22	2771	61 42 16	2790	60 7 35	2808	58 33 18	2828
	α Arietis E.	68 53 52	2725	67 17 46	2742	65 42 2	2758	64 6 39	2775
	SUN E.	94 42 46	3059	93 13 46	3077	91 45 8	3094	90 16 51	3110
23	SATURN W.	102 52 2	2837	104 25 42	2851	105 59 4	2865	107 32 8	2877
	Antares W.	91 54 30	2828	93 28 22	2841	95 1 57	2854	96 35 15	2866
	α Aquilæ W.	46 8 50	4202	47 17 14	4147	48 26 30	4099	49 36 33	4053
	VENUS E.	50 47 51	2917	49 15 54	2935	47 44 19	2952	46 13 6	2969
	α Arietis E.	56 14 56	2851	54 41 34	2866	53 8 31	2880	51 35 46	2893
	SUN E.	83 0 21	3189	81 33 59	3204	80 7 54	3219	78 42 7	3232
24	Antares W.	104 17 49	2925	105 49 36	2935	107 21 10	2946	108 52 31	2954
	α Aquilæ W.	55 36 18	3893	56 49 45	3870	58 3 35	3850	59 17 46	3830
	VENUS E.	38 42 20	3054	37 13 14	3070	35 44 28	3088	34 16 4	3105
	α Arietis E.	43 56 18	2959	42 25 14	2971	40 54 25	2984	39 23 52	2996
	SUN E.	71 37 5	3295	70 12 48	3307	68 48 45	3318	67 24 54	3329
25	α Aquilæ W.	65 32 55	3763	66 48 36	3752	68 4 28	3744	69 20 29	3736
	α Arietis E.	31 54 55	3057	30 25 53	3071	28 57 8	3084	27 28 39	3098
	SUN E.	60 28 39	3377	59 5 56	3386	57 43 23	3393	56 20 59	3400
26	α Aquilæ W.	75 42 20	3709	76 58 58	3705	78 15 40	3702	79 32 25	3699
	Fomalhaut W.	50 23 31	3685	51 40 34	3663	52 58 0	3644	54 15 47	3626
	SUN E.	49 31 0	3434	48 9 22	3440	46 47 51	3446	45 26 26	3450
27	α Aquilæ W.	85 56 39	3694	87 13 32	3694	88 30 25	3695	89 47 17	3696
	Fomalhaut W.	60 49 0	3556	62 8 22	3545	63 27 56	3535	64 47 41	3525
	α Pegasi W.	38 16 46	3528	39 36 39	3502	40 57 1	3480	42 17 48	3458
	SUN E.	38 40 42	3474	37 19 49	3478	35 59 0	3481	34 38 15	3486
28	α Aquilæ W.	96 11 10	3709	97 27 48	3713	98 44 21	3718	100 0 49	3723
	Fomalhaut W.	71 28 54	3486	72 49 34	3480	74 10 21	3473	75 31 15	3468
	α Pegasi W.	49 6 59	3378	50 29 41	3365	51 52 37	3353	53 15 47	3342
	SUN E.	27 55 41	3507	26 35 25	3514	25 15 16	3519	23 55 13	3526

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Sideral Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from		Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.	Added to Apparent Time.				
Tues.	1	^h 4 ^m 38 ^s 31.98	10.243	N. 22 8 0.2	+19.90	15 48.27	68.43	^m 2 ^s 22.50		0.386	
Wed.	2	4 42 38.02	10.259	22 15 46.3	18.94	15 48.14	68.49	2 13.05		0.401	
Thur.	3	4 46 44.42	10.274	22 23 9.0	17.96	15 48.01	68.54	2 3.23		0.416	
Frid.	4	4 50 51.18	10.288	22 30 8.2	+16.98	15 47.89	68.59	1 53.06		0.430	
Sat.	5	4 54 58.25	10.301	22 36 43.8	15.99	15 47.78	68.64	1 42.58		0.443	
SUN.	6	4 59 5.63	10.313	22 42 55.6	14.99	15 47.67	68.68	1 31.78		0.455	
Mon.	7	5 3 13.30	10.325	22 48 43.4	+13.99	15 47.56	68.72	1 20.71		0.467	
Tues.	8	5 7 21.23	10.335	22 54 7.3	12.99	15 47.46	68.76	1 9.37		0.477	
Wed.	9	5 11 29.40	10.345	22 59 7.0	11.98	15 47.36	68.79	0 57.79		0.487	
Thur.	10	5 15 37.79	10.354	23 3 42.5	+10.97	15 47.27	68.82	0 45.98		0.496	
Frid.	11	5 19 46.39	10.362	23 7 53.7	9.96	15 47.18	68.85	0 33.98		0.504	
Sat.	12	5 23 55.16	10.369	23 11 40.5	8.94	15 47.09	68.88	0 21.79		0.511	
SUN.	13	5 28 4.11	10.376	23 15 2.8	+ 7.92	15 47.01	68.90	0 9.44		0.518	
Mon.	14	5 32 13.20	10.381	23 18 0.5	6.89	15 46.93	68.92	0 3.06		0.523	
Tues.	15	5 36 22.42	10.386	23 20 33.7	5.87	15 46.85	68.94	0 15.69		0.528	
Wed.	16	5 40 31.75	10.390	23 22 42.2	+ 4.84	15 46.77	68.95	0 28.42		0.532	
Thur.	17	5 44 41.17	10.394	23 24 25.9	3.81	15 46.70	68.96	0 41.25		0.536	
Frid.	18	5 48 50.66	10.396	23 25 45.0	2.78	15 46.63	68.97	0 54.14		0.538	
Sat.	19	5 53 0.20	10.398	23 26 39.2	+ 1.74	15 46.57	68.97	1 7.09		0.540	
SUN.	20	5 57 9.77	10.399	23 27 8.7	+ 0.71	15 46.51	68.97	1 20.06		0.541	
Mon.	21	6 1 19.35	10.399	23 27 13.3	- 0.33	15 46.45	68.97	1 33.05		0.541	
Tues.	22	6 5 28.91	10.398	23 26 53.1	- 1.36	15 46.39	68.96	1 46.02		0.540	
Wed.	23	6 9 38.43	10.396	23 26 8.1	2.39	15 46.34	68.95	1 58.95		0.538	
Thur.	24	6 13 47.90	10.392	23 24 58.2	3.43	15 46.30	68.94	2 11.82		0.534	
Frid.	25	6 17 57.27	10.388	23 23 23.6	- 4.46	15 46.26	68.92	2 24.60		0.530	
Sat.	26	6 22 6.53	10.383	23 21 24.3	5.49	15 46.23	68.90	2 37.27		0.525	
SUN.	27	6 26 15.66	10.377	23 19 0.2	6.52	15 46.20	68.88	2 49.80		0.519	
Mon.	28	6 30 24.61	10.369	23 16 11.6	- 7.54	15 46.17	68.85	3 2.16		0.511	
Tues.	29	6 34 33.38	10.361	23 12 58.4	8.56	15 46.15	68.82	3 14.33		0.503	
Wed.	30	6 38 41.92	10.351	23 9 40.8	9.58	15 46.14	68.79	3 26.29		0.493	
Thur.	31	6 42 50.22	10.340	N. 23 5 18.8	-10.59	15 46.14	68.76	3 38.00		0.482	

NOTE.—The mean time of semidiameter passing may be found by subtracting 0.19 from the sideral time.

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing; the sign — indicates that north declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Added to		Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Subtracted from Mean Time.			
Tues.	1	^h 4 ^m 38 ^s 32.39	10.242	N.22 8 1.1	+19.90	^m 2 ^s 22.49	0.386	^h 4 ^m 40 ^s 54.88	
Wed.	2	4 42 38.40	10.258	22 15 47.0	18.93	2 13.04	0.402	4 44 51.43	
Thur.	3	4 46 44.78	10.273	22 23 9.6	17.95	2 3.21	0.416	4 48 47.99	
Frid.	4	4 50 51.50	10.287	22 30 8.8	+16.97	1 53.05	0.429	4 52 44.55	
Sat.	5	4 54 58.55	10.300	22 36 44.3	15.98	1 42.56	0.442	4 56 41.11	
SUN.	6	4 59 5.90	10.312	22 42 56.0	14.99	1 31.77	0.455	5 0 37.67	
Mon.	7	5 3 13.53	10.324	22 48 43.8	+13.99	1 20.70	0.467	5 4 34.23	
Tues.	8	5 7 21.43	10.334	22 54 7.6	12.99	1 9.36	0.478	5 8 30.78	
Wed.	9	5 11 29.56	10.344	22 59 7.2	11.98	0 57.78	0.487	5 12 27.34	
Thur.	10	5 15 37.92	10.353	23 3 42.7	+10.97	0 45.98	0.496	5 16 23.90	
Frid.	11	5 19 46.49	10.361	23 7 53.8	9.96	0 33.97	0.504	5 20 20.46	
Sat.	12	5 23 55.23	10.368	23 11 40.5	8.94	0 21.79	0.511	5 24 17.02	
SUN.	13	5 28 4.14	10.374	23 15 2.8	+ 7.92	0 9.44	0.518	5 28 13.58	
Mon.	14	5 32 13.19	10.380	23 18 0.5	6.90	0 3.06	0.524	5 32 10.13	
Tues.	15	5 36 22.38	10.385	23 20 33.7	5.87	0 15.69	0.528	5 36 6.69	
Wed.	16	5 40 31.67	10.389	23 22 42.2	+ 4.84	0 28.42	0.532	5 40 3.25	
Thur.	17	5 44 41.05	10.392	23 24 25.9	3.81	0 41.24	0.535	5 43 59.81	
Frid.	18	5 48 50.51	10.395	23 25 45.0	2.78	0 54.14	0.538	5 47 56.37	
Sat.	19	5 53 0.01	10.397	23 26 39.2	+ 1.74	1 7.08	0.540	5 51 52.93	
SUN.	20	5 57 9.54	10.397	23 27 8.7	+ 0.71	1 20.05	0.541	5 55 49.49	
Mon.	21	6 1 19.08	10.397	23 27 13.3	- 0.33	1 33.04	0.541	5 59 46.04	
Tues.	22	6 5 28.60	10.396	23 26 53.1	- 1.36	1 46.00	0.539	6 3 42.60	
Wed.	23	6 9 38.09	10.394	23 26 8.1	2.39	1 58.93	0.537	6 7 39.16	
Thur.	24	6 13 47.52	10.391	23 24 58.4	3.43	2 11.80	0.534	6 11 35.72	
Frid.	25	6 17 56.86	10.387	23 23 23.8	- 4.46	2 24.58	0.530	6 15 32.28	
Sat.	26	6 22 6.08	10.382	23 21 24.5	5.48	2 37.25	0.525	6 19 28.84	
SUN.	27	6 26 15.17	10.375	23 19 0.5	6.51	2 49.78	0.519	6 23 25.39	
Mon.	28	6 30 24.09	10.367	23 16 12.0	- 7.53	3 2.14	0.512	6 27 21.95	
Tues.	29	6 34 32.82	10.359	23 12 58.9	8.55	3 14.31	0.503	6 31 18.51	
Wed.	30	6 38 41.33	10.349	23 9 21.3	9.57	3 26.26	0.493	6 35 15.07	
Thur.	31	6 42 49.60	10.339	N.23 5 19.5	-10.58	3 37.97	0.482	6 39 11.63	

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
 The sign + prefixed to the hourly change of declination indicates that north declinations are increasing; the sign — indicates that north declinations are decreasing.

Diff. for 1 Hour,
 + 9^h.8565.
 (Table III.)

AT GREENWICH MEAN NOON.									
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.	
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.				
		λ	λ'						
1	152	71 12 0.6	11 27.2	143.70	+ 0.16	0.0062451	+25.3	h m s 19 15 55.24	
2	153	72 9 28.9	8 55.3	143.65	+ 0.05	0.0063046	24.3	19 11 59.32	
3	154	73 6 56.1	6 22.3	143.61	— 0.07	0.0063617	23.3	19 8 3.41	
4	155	74 4 22.2	3 48.3	143.56	— 0.20	0.0064165	+22.3	19 4 7.50	
5	156	75 1 47.1	1 13.0	143.52	0.33	0.0064690	21.4	19 0 11.59	
6	157	75 59 11.0	58 36.7	143.47	0.46	0.0065194	20.6	18 56 15.68	
7	158	76 56 33.8	55 59.3	143.43	— 0.58	0.0065679	+19.8	18 52 19.76	
8	159	77 53 55.5	53 20.8	143.38	0.67	0.0066143	19.0	18 48 23.85	
9	160	78 51 16.1	50 41.2	143.34	0.75	0.0066589	18.3	18 44 27.94	
10	161	79 48 35.8	48 0.7	143.30	— 0.79	0.0067020	+17.6	18 40 32.02	
11	162	80 45 54.6	45 19.4	143.26	0.81	0.0067435	17.0	18 36 36.11	
12	163	81 43 12.4	42 37.0	143.23	0.79	0.0067834	16.4	18 32 40.20	
13	164	82 40 29.5	39 53.9	143.20	— 0.74	0.0068219	+15.8	18 28 44.29	
14	165	83 37 45.9	37 10.1	143.17	0.67	0.0068591	15.2	18 24 48.38	
15	166	84 35 1.7	34 25.7	143.15	0.58	0.0068948	14.6	18 20 52.46	
16	167	85 32 16.9	31 40.7	143.13	— 0.47	0.0069293	+14.0	18 16 56.55	
17	168	86 29 31.8	28 55.4	143.11	0.34	0.0069623	13.4	18 13 0.64	
18	169	87 26 46.3	26 9.7	143.10	0.21	0.0069939	12.8	18 9 4.72	
19	170	88 24 0.4	23 23.7	143.09	— 0.07	0.0070239	+12.1	18 5 8.81	
20	171	89 21 14.5	20 37.6	143.08	+ 0.05	0.0070522	11.4	18 1 12.90	
21	172	90 18 28.3	17 51.2	143.08	0.16	0.0070789	10.7	17 57 16.99	
22	173	91 15 42.1	15 4.8	143.07	+ 0.26	0.0071037	+ 9.9	17 53 21.08	
23	174	92 12 55.8	12 18.3	143.07	0.32	0.0071264	9.0	17 49 25.16	
24	175	93 10 9.5	9 31.8	143.07	0.35	0.0071468	8.1	17 45 29.25	
25	176	94 7 23.2	6 45.3	143.07	+ 0.35	0.0071651	+ 7.1	17 41 33.34	
26	177	95 4 36.9	3 58.8	143.07	0.33	0.0071809	6.1	17 37 37.42	
27	178	96 1 50.6	1 12.3	143.07	0.27	0.0071942	5.0	17 33 41.51	
28	179	96 59 4.1	58 25.7	143.07	+ 0.20	0.0072050	+ 3.9	17 29 45.60	
29	180	97 56 17.7	55 39.1	143.06	+ 0.09	0.0072131	2.8	17 25 49.68	
30	181	98 53 31.2	52 52.4	143.06	— 0.02	0.0072185	1.7	17 21 53.77	
31	182	99 50 44.5	50 5.5	143.05	— 0.15	0.0072213	+ 0.7	17 17 57.86	
NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ' to the mean equinox of January 0.0.								Diff. for 1 Hour, —9 ^s .8296. (Table II.)	

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	THE MOON'S								
	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	' "	' "	' "	"	' "	"	h m	m	d
1	14 50.7	14 53.1	54 22.2	+0.68	54 30.9	+0.78	0 44.9	2.16	1.0
2	14 55.8	14 58.8	54 40.8	0.88	54 51.9	0.98	1 36.7	2.15	2.0
3	15 2.1	15 5.9	55 4.2	1.08	55 17.8	1.18	2 27.8	2.10	3.0
4	15 9.9	15 14.3	55 32.6	+1.29	55 48.7	+1.40	3 17.3	2.03	4.0
5	15 19.0	15 24.1	56 6.1	1.50	56 24.7	1.60	4 5.1	1.96	5.0
6	15 29.5	15 35.2	56 44.5	1.70	57 5.5	1.79	4 51.4	1.91	6.0
7	15 41.2	15 47.4	57 27.5	+1.87	57 50.3	+1.92	5 37.0	1.90	7.0
8	15 53.7	16 0.1	58 13.6	1.95	58 37.1	1.95	6 23.0	1.94	8.0
9	16 6.5	16 12.7	59 0.5	1.93	59 23.3	1.85	7 10.7	2.04	9.0
10	16 18.6	16 24.0	59 45.0	+1.74	60 5.0	+1.57	8 1.6	2.20	10.0
11	16 28.9	16 32.9	60 22.7	1.36	60 37.6	1.10	8 56.8	2.41	11.0
12	16 36.1	16 38.2	60 49.2	0.80	60 56.9	+0.47	9 57.0	2.61	12.0
13	16 39.1	16 38.9	61 0.4	+0.11	60 59.5	-0.26	11 1.4	2.74	13.0
14	16 37.4	16 34.7	60 54.1	-0.63	60 44.3	1.00	12 7.6	2.75	14.0
15	16 30.9	16 26.1	60 30.2	1.33	60 12.4	1.62	13 12.1	2.61	15.0
16	16 20.3	16 13.9	59 51.4	-1.87	59 27.6	-2.07	14 12.1	2.39	16.0
17	16 6.8	15 59.4	59 1.7	2.21	58 34.5	2.30	15 6.7	2.16	17.0
18	15 51.8	15 44.2	58 6.6	2.33	57 38.5	2.33	15 56.0	1.97	18.0
19	15 36.6	15 29.3	57 10.8	-2.27	56 44.1	-2.17	16 41.4	1.83	19.0
20	15 22.4	15 16.0	56 18.7	2.05	55 55.0	1.89	17 24.2	1.74	20.0
21	15 10.1	15 4.8	55 33.3	1.72	55 13.8	1.53	18 5.6	1.72	21.0
22	15 0.1	14 56.1	54 56.6	-1.33	54 41.8	-1.13	18 46.9	1.74	22.0
23	14 52.7	14 50.0	54 29.4	0.93	54 19.4	0.73	19 29.2	1.79	23.0
24	14 47.9	14 46.5	54 11.9	0.53	54 6.8	-0.33	20 13.3	1.88	24.0
25	14 45.7	14 45.5	54 3.9	-0.15	54 3.1	+0.02	20 59.8	1.99	25.0
26	14 45.9	14 46.7	54 4.4	+0.19	54 7.6	0.33	21 48.8	2.09	26.0
27	14 48.0	14 49.8	54 12.4	0.47	54 18.8	0.59	22 39.8	2.16	27.0
28	14 51.9	14 54.4	54 26.6	+0.70	54 35.7	+0.80	23 31.8	2.17	28.0
29	14 57.2	15 0.2	54 45.9	0.89	54 57.0	0.97	6		29.0
30	15 3.5	15 7.0	55 9.1	1.04	55 21.9	1.10	0 23.7	2.14	0.4
31	15 10.6	15 14.5	55 35.4	+1.15	55 49.4	+1.19	1 14.3	2.07	1.4

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 1.					THURSDAY 3.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
1	5 24 15.43	2.2441	N.26 49 38.1	- 0.007	1	7 11 33.32	2.2003	N.24 16 42.0	2.281
2	5 26 30.10	2.2449	26 49 33.7	0.140	2	7 13 45.27	2.1979	24 10 21.5	6.403
3	5 28 44.82	2.2457	26 49 21.3	0.273	3	7 15 57.07	2.1955	24 3 53.7	6.585
4	5 30 59.58	2.2463	26 49 1.0	0.406	4	7 18 8.73	2.1931	23 57 18.5	6.647
5	5 33 14.38	2.2469	26 48 32.6	0.540	5	7 20 20.24	2.1906	23 50 36.1	6.767
6	5 35 29.21	2.2474	26 47 56.2	0.673	6	7 22 31.60	2.1881	23 43 46.5	6.887
7	5 37 44.07	2.2478	26 47 11.8	0.807	7	7 24 42.81	2.1855	23 36 49.6	7.007
8	5 39 58.95	2.2482	26 46 19.4	0.941	8	7 26 53.86	2.1828	23 29 45.6	7.126
9	5 42 13.85	2.2484	26 45 18.9	1.075	9	7 29 4.75	2.1802	23 22 34.5	7.243
10	5 44 28.76	2.2486	26 44 10.4	1.208	10	7 31 15.49	2.1776	23 15 16.4	7.361
11	5 46 43.68	2.2487	26 42 53.9	1.342	11	7 33 26.07	2.1750	23 7 51.2	7.479
12	5 48 58.60	2.2487	26 41 29.3	1.476	12	7 35 36.49	2.1723	23 0 19.0	7.596
13	5 51 13.53	2.2487	26 39 56.7	1.610	13	7 37 46.74	2.1695	22 52 39.7	7.712
14	5 53 28.45	2.2486	26 38 16.1	1.743	14	7 39 56.83	2.1668	22 44 53.5	7.827
15	5 55 43.36	2.2483	26 36 27.5	1.877	15	7 42 6.76	2.1640	22 37 0.5	7.941
16	5 57 58.25	2.2480	26 34 30.8	2.011	16	7 44 16.51	2.1611	22 29 0.6	8.055
17	6 0 13.12	2.2477	26 32 26.1	2.145	17	7 46 26.09	2.1583	22 20 53.9	8.167
18	6 2 27.97	2.2473	26 30 13.4	2.278	18	7 48 35.51	2.1556	22 12 40.5	8.280
19	6 4 42.79	2.2467	26 27 52.7	2.412	19	7 50 44.76	2.1528	22 4 20.3	8.392
20	6 6 57.57	2.2460	26 25 24.0	2.545	20	7 52 53.84	2.1499	21 55 53.4	8.503
21	6 9 12.31	2.2454	26 22 47.3	2.677	21	7 55 2.75	2.1470	21 47 19.9	8.613
22	6 11 27.02	2.2447	26 20 2.7	2.810	22	7 57 11.48	2.1441	21 38 39.8	8.723
23	6 13 41.68	2.2439	26 17 10.1	2.942	23	7 59 20.04	2.1412	21 29 53.1	8.832
24	6 15 56.29	2.2430	N.26 14 9.6	3.075	24	8 1 28.43	2.1384	N.21 20 59.9	8.940
WEDNESDAY 2.					FRIDAY 4.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
1	6 18 10.84	2.2420	N.26 11 1.1	3.207	1	8 3 36.65	2.1355	N.21 12 0.3	9.048
2	6 20 25.33	2.2410	26 7 44.7	3.339	2	8 5 44.69	2.1326	21 2 54.2	9.155
3	6 22 39.76	2.2399	26 4 20.4	3.472	3	8 7 52.56	2.1297	20 53 41.7	9.261
4	6 24 54.12	2.2387	26 0 48.1	3.603	4	8 10 0.26	2.1269	20 44 22.9	9.366
5	6 27 8.41	2.2375	25 57 8.0	3.734	5	8 12 7.79	2.1240	20 34 57.8	9.470
6	6 29 22.62	2.2362	25 53 20.0	3.866	6	8 14 15.14	2.1211	20 25 26.5	9.574
7	6 31 36.75	2.2348	25 49 24.1	3.997	7	8 16 22.32	2.1182	20 15 48.9	9.678
8	6 33 50.80	2.2334	25 45 20.4	4.127	8	8 18 29.33	2.1153	20 6 5.1	9.780
9	6 36 4.76	2.2319	25 41 8.9	4.256	9	8 20 36.16	2.1124	19 56 15.3	9.881
10	6 38 18.63	2.2303	25 36 49.7	4.385	10	8 22 42.82	2.1096	19 46 19.4	9.982
11	6 40 32.40	2.2287	25 32 22.7	4.515	11	8 24 49.31	2.1067	19 36 17.5	10.082
12	6 42 46.07	2.2271	25 27 47.9	4.644	12	8 26 55.63	2.1039	19 26 9.6	10.181
13	6 44 59.65	2.2254	25 23 5.4	4.773	13	8 29 1.78	2.1011	19 15 55.8	10.279
14	6 47 13.12	2.2236	25 18 15.2	4.901	14	8 31 7.76	2.0983	19 5 36.1	10.377
15	6 49 26.48	2.2217	25 13 17.3	5.028	15	8 33 13.57	2.0955	18 55 10.6	10.473
16	6 51 39.72	2.2197	25 8 11.8	5.156	16	8 35 19.22	2.0927	18 44 39.3	10.569
17	6 53 52.85	2.2178	25 2 58.6	5.283	17	8 37 24.70	2.0900	18 34 2.3	10.665
18	6 56 5.86	2.2157	24 57 37.8	5.409	18	8 39 30.02	2.0872	18 23 19.5	10.760
19	6 58 18.74	2.2136	24 52 9.5	5.535	19	8 41 35.17	2.0845	18 12 31.1	10.853
20	7 0 31.50	2.2116	24 46 33.6	5.661	20	8 43 40.16	2.0818	18 1 37.1	10.946
21	7 2 44.13	2.2094	24 40 50.2	5.786	21	8 45 44.99	2.0792	17 50 37.6	11.037
22	7 4 56.63	2.2072	24 34 59.3	5.910	22	8 47 49.67	2.0767	17 39 32.6	11.128
23	7 7 9.00	2.2050	24 29 1.0	6.034	23	8 49 54.19	2.0740	17 28 22.2	11.218
24	7 9 21.23	2.2027	24 22 55.2	6.158	24	8 51 58.55	2.0713	17 17 6.4	11.308
	7 11 33.32	2.2003	N.24 16 42.0	6.281		8 54 2.75	2.0687	N.17 5 45.2	11.397

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 5.					MONDAY 7.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
1	8 54 2.75	2.0687	N. 17 5 45.2	11.397	1	10 31 15.63	2.0035	N. 6 32 54.6	14.689
2	8 56 6.80	2.0663	16 54 18.7	11.485	2	10 33 15.84	2.0037	6 18 15.5	14.674
3	8 58 10.71	2.0639	16 42 47.0	11.572	3	10 35 16.07	2.0040	6 3 33.8	14.717
4	9 0 14.47	2.0614	16 31 10.1	11.658	4	10 37 16.32	2.0043	5 48 49.5	14.759
5	9 2 18.08	2.0590	16 19 28.1	11.743	5	10 39 16.59	2.0047	5 34 2.7	14.802
6	9 4 21.55	2.0566	16 7 41.0	11.828	6	10 41 16.89	2.0052	5 19 13.3	14.843
7	9 6 24.87	2.0543	15 55 48.8	11.912	7	10 43 17.22	2.0058	5 4 21.5	14.883
8	9 8 28.06	2.0520	15 43 51.6	11.994	8	10 45 17.59	2.0065	4 49 27.3	14.921
9	9 10 31.11	2.0497	15 31 49.5	12.076	9	10 47 18.00	2.0072	4 34 30.9	14.958
10	9 12 34.02	2.0474	15 19 42.5	12.157	10	10 49 18.46	2.0081	4 19 32.3	14.995
11	9 14 36.80	2.0452	15 7 30.6	12.237	11	10 51 18.97	2.0090	4 4 31.5	15.032
12	9 16 39.45	2.0432	14 55 14.0	12.316	12	10 53 19.54	2.0099	3 49 28.5	15.067
13	9 18 41.98	2.0412	14 42 52.7	12.394	13	10 55 20.16	2.0109	3 34 23.5	15.100
14	9 20 44.39	2.0391	14 30 26.7	12.472	14	10 57 20.85	2.0121	3 19 16.5	15.132
15	9 22 46.67	2.0370	14 17 56.0	12.550	15	10 59 21.62	2.0134	3 4 7.6	15.163
16	9 24 48.83	2.0351	14 5 20.7	12.626	16	11 1 22.46	2.0148	2 48 56.9	15.193
17	9 26 50.88	2.0332	13 52 40.9	12.701	17	11 3 23.39	2.0162	2 33 44.4	15.223
18	9 28 52.82	2.0313	13 39 56.6	12.774	18	11 5 24.40	2.0176	2 18 30.1	15.252
19	9 30 54.64	2.0294	13 27 8.0	12.847	19	11 7 25.50	2.0192	2 3 14.2	15.279
20	9 32 56.35	2.0277	13 14 15.0	12.920	20	11 9 26.70	2.0208	1 47 56.7	15.305
21	9 34 57.97	2.0261	13 1 17.6	12.992	21	11 11 28.00	2.0226	1 32 37.6	15.330
22	9 36 59.49	2.0245	12 48 15.9	13.063	22	11 13 29.41	2.0244	1 17 17.1	15.353
23	9 39 0.91	2.0229	12 35 10.0	13.133	23	11 15 30.93	2.0262	1 1 55.2	15.376
24	9 41 2.24	2.0213	N. 12 21 59.9	13.202	24	11 17 32.56	2.0282	N. 0 46 32.0	15.397
SUNDAY 6.					TUESDAY 8.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
1	9 43 3.47	2.0197	N. 12 8 45.8	13.269	1	11 19 34.31	2.0302	N. 0 31 7.5	15.418
2	9 45 4.61	2.0183	11 55 27.6	13.337	2	11 21 36.19	2.0324	0 15 41.8	15.437
3	9 47 5.67	2.0171	11 42 5.4	13.403	3	11 23 38.20	2.0348	N. 0 0 15.0	15.455
4	9 49 6.66	2.0158	11 28 39.2	13.469	4	11 25 40.36	2.0372	S. 0 15 12.8	15.472
5	9 51 7.57	2.0146	11 15 9.1	13.533	5	11 27 42.66	2.0396	0 30 41.6	15.488
6	9 53 8.41	2.0134	11 1 35.2	13.596	6	11 29 45.11	2.0421	0 46 11.4	15.503
7	9 55 9.17	2.0122	10 47 57.6	13.659	7	11 31 47.71	2.0447	1 1 42.0	15.517
8	9 57 9.87	2.0112	10 34 16.2	13.721	8	11 33 50.47	2.0473	1 17 13.4	15.528
9	9 59 10.51	2.0102	10 20 31.1	13.782	9	11 35 53.39	2.0501	1 32 45.4	15.538
10	10 1 11.09	2.0092	10 6 42.4	13.841	10	11 37 56.48	2.0530	1 48 18.0	15.548
11	10 3 11.62	2.0084	9 52 50.2	13.900	11	11 39 59.75	2.0561	2 3 51.2	15.557
12	10 5 12.10	2.0076	9 38 54.4	13.959	12	11 42 3.21	2.0592	2 19 24.8	15.563
13	10 7 12.53	2.0068	9 24 55.1	14.017	13	11 44 6.85	2.0623	2 34 58.8	15.569
14	10 9 12.92	2.0062	9 10 52.4	14.073	14	11 46 10.68	2.0654	2 50 33.1	15.574
15	10 11 13.27	2.0056	8 56 46.4	14.128	15	11 48 14.70	2.0687	3 6 7.7	15.577
16	10 13 13.59	2.0051	8 42 37.1	14.182	16	11 50 18.93	2.0722	3 21 42.4	15.578
17	10 15 13.88	2.0046	8 28 24.6	14.235	17	11 52 23.36	2.0757	3 37 17.1	15.579
18	10 17 14.14	2.0042	8 14 8.9	14.288	18	11 54 28.01	2.0793	3 52 51.9	15.579
19	10 19 14.38	2.0038	7 59 50.0	14.340	19	11 56 32.88	2.0830	4 8 26.6	15.577
20	10 21 14.60	2.0036	7 45 28.1	14.390	20	11 58 37.97	2.0868	4 24 1.1	15.573
21	10 23 14.81	2.0035	7 31 3.2	14.440	21	12 0 43.29	2.0907	4 39 35.4	15.568
22	10 25 15.02	2.0034	7 16 35.3	14.489	22	12 2 48.85	2.0947	4 55 9.3	15.562
23	10 27 15.22	2.0033	7 2 4.5	14.537	23	12 4 54.65	2.0987	5 10 42.8	15.554
24	10 29 15.42	2.0034	6 47 30.9	14.583	24	12 7 0.69	2.1028	5 26 15.8	15.543
25	10 31 15.63	2.0035	N. 6 32 54.6	14.629			2.1070	S. 5 41 48.2	15.534

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 9.					FRIDAY 11.				
0	12 9 6.98	2.2070	S. 5 41 48.2	15.534	0	13 56 44.51	2.4057	S. 17 24 32.3	13.052
1	12 11 13.53	2.1113	5 57 19.9	15.522	1	13 59 9.09	2.4135	17 37 32.5	12.954
2	12 13 20.34	2.1157	6 12 50.9	15.509	2	14 1 34.13	2.4213	17 50 26.8	12.854
3	12 15 27.42	2.1203	6 28 21.0	15.493	3	14 3 59.64	2.4291	18 3 15.0	12.751
4	12 17 34.78	2.1249	6 43 50.1	15.477	4	14 6 25.62	2.4368	18 15 56.9	12.646
5	12 19 42.41	2.1295	6 59 18.3	15.461	5	14 8 52.06	2.4446	18 28 32.5	12.539
6	12 21 50.32	2.1343	7 14 45.4	15.444	6	14 11 18.97	2.4524	18 41 1.6	12.430
7	12 23 58.52	2.1392	7 30 11.3	15.420	7	14 13 46.35	2.4603	18 53 24.1	12.318
8	12 26 7.02	2.1441	7 45 35.8	15.397	8	14 16 14.21	2.4682	19 5 39.8	12.204
9	12 28 15.81	2.1491	8 0 58.9	15.372	9	14 18 42.54	2.4761	19 17 48.6	12.088
10	12 30 24.91	2.1542	8 16 20.5	15.347	10	14 21 11.34	2.4839	19 29 50.4	11.971
11	12 32 34.32	2.1595	8 31 40.5	15.320	11	14 23 40.61	2.4918	19 41 45.1	11.851
12	12 34 44.05	2.1648	8 46 58.9	15.292	12	14 26 10.36	2.4997	19 53 32.5	11.729
13	12 36 54.10	2.1702	9 2 15.5	15.261	13	14 28 40.58	2.5076	20 5 12.6	11.605
14	12 39 4.47	2.1756	9 17 30.2	15.228	14	14 31 11.27	2.5154	20 16 45.1	11.478
15	12 41 15.17	2.1812	9 32 42.9	15.194	15	14 33 42.43	2.5232	20 28 10.0	11.350
16	12 43 26.21	2.1868	9 47 53.5	15.159	16	14 36 14.06	2.5311	20 39 27.1	11.219
17	12 45 37.59	2.1926	10 3 2.0	15.122	17	14 38 46.16	2.5389	20 50 36.3	11.087
18	12 47 49.32	2.1984	10 18 8.2	15.083	18	14 41 18.73	2.5467	21 1 37.5	10.952
19	12 50 1.40	2.2043	10 33 12.0	15.042	19	14 43 51.76	2.5544	21 12 30.5	10.815
20	12 52 13.84	2.2102	10 48 13.3	15.000	20	14 46 25.25	2.5621	21 23 15.3	10.677
21	12 54 26.63	2.2163	11 3 12.0	14.956	21	14 48 59.21	2.5698	21 33 51.7	10.535
22	12 56 39.79	2.2225	11 18 8.0	14.910	22	14 51 33.63	2.5774	21 44 19.5	10.388
23	12 58 53.33	2.2287	S. 11 33 1.2	14.862	23	14 54 8.50	2.5849	S. 21 54 38.7	10.247
THURSDAY 10.					SATURDAY 12.				
0	13 1 7.24	2.2350	S. 11 47 51.5	14.813	0	14 56 43.82	2.5924	S. 22 4 49.1	20.099
1	13 3 21.53	2.2414	12 2 38.8	14.761	1	14 59 19.59	2.5999	22 14 50.6	9.949
2	13 5 36.21	2.2478	12 17 23.0	14.709	2	15 1 55.81	2.6073	22 24 43.0	9.797
3	13 7 51.27	2.2542	12 32 3.9	14.651	3	15 4 32.47	2.6147	22 34 26.3	9.644
4	13 10 6.72	2.2608	12 46 41.5	14.597	4	15 7 9.57	2.6220	22 44 0.3	9.489
5	13 12 22.57	2.2676	13 1 15.6	14.538	5	15 9 47.11	2.6292	22 53 25.0	9.332
6	13 14 38.83	2.2743	13 15 46.1	14.478	6	15 12 25.07	2.6365	23 2 40.2	9.172
7	13 16 55.49	2.2811	13 30 13.0	14.417	7	15 15 3.46	2.6433	23 11 45.7	9.011
8	13 19 12.56	2.2880	13 44 36.1	14.352	8	15 17 42.27	2.6502	23 20 41.5	8.848
9	13 21 30.05	2.2950	13 58 55.2	14.285	9	15 20 21.49	2.6571	23 29 27.5	8.684
10	13 23 47.96	2.3020	14 13 10.3	14.217	10	15 23 1.12	2.6638	23 38 3.6	8.517
11	13 26 6.29	2.3090	14 27 21.3	14.147	11	15 25 41.15	2.6704	23 46 29.5	8.347
12	13 28 25.04	2.3161	14 41 28.0	14.076	12	15 28 21.57	2.6769	23 54 45.2	8.176
13	13 30 44.22	2.3233	14 55 30.4	14.002	13	15 31 2.38	2.6834	24 2 50.6	8.004
14	13 33 3.84	2.3306	15 9 28.2	13.925	14	15 33 43.58	2.6897	24 10 45.7	7.831
15	13 35 23.89	2.3379	15 23 21.4	13.847	15	15 36 25.15	2.6959	24 18 30.3	7.655
16	13 37 44.38	2.3453	15 37 9.9	13.767	16	15 39 7.09	2.7020	24 26 4.3	7.477
17	13 40 5.32	2.3527	15 50 53.5	13.685	17	15 41 49.39	2.7080	24 33 27.5	7.297
18	13 42 26.70	2.3601	16 4 32.1	13.601	18	15 44 32.05	2.7138	24 40 39.9	7.116
19	13 44 48.53	2.3676	16 18 5.6	13.515	19	15 47 15.05	2.7194	24 47 41.4	6.933
20	13 47 10.81	2.3752	16 31 33.9	13.427	20	15 49 58.38	2.7249	24 54 31.9	6.750
21	13 49 33.55	2.3828	16 44 56.9	13.337	21	15 52 42.04	2.7303	25 1 11.4	6.565
22	13 51 56.75	2.3904	16 58 14.4	13.244	22	15 55 26.02	2.7356	25 7 39.7	6.378
23	13 54 20.40	2.3980	17 11 26.2	13.149	23	15 58 10.31	2.7406	25 13 56.7	6.189
24	13 56 44.51	2.4057	S. 17 24 32.3	13.052	24	16 0 54.89	2.7454	S. 25 20 2.4	5.999

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 13.					TUESDAY 15.				
0	16 0 54.89	2.7454	S. 25 20 2.4	5.999	0	18 14 37.17	2.7442	S. 26 15 14.6	3.780
1	16 3 39.76	2.7502	25 25 56.6	5.808	1	18 17 21.67	2.7392	26 11 25.6	3.912
2	16 6 24.92	2.7548	25 31 39.4	5.617	2	18 20 5.87	2.7340	26 7 25.1	4.103
3	16 9 10.34	2.7592	25 37 10.6	5.423	3	18 22 49.75	2.7286	26 3 13.2	4.293
4	16 11 56.02	2.7634	25 42 30.1	5.227	4	18 25 33.30	2.7230	25 58 49.9	4.482
5	16 14 41.95	2.7675	25 47 37.8	5.031	5	18 28 16.51	2.7172	25 54 15.3	4.669
6	16 17 28.12	2.7713	25 52 33.8	4.834	6	18 30 59.36	2.7112	25 49 29.6	4.854
7	16 20 14.51	2.7750	25 57 17.9	4.636	7	18 33 41.85	2.7051	25 44 32.8	5.038
8	16 23 1.12	2.7785	26 1 50.1	4.437	8	18 36 23.97	2.6989	25 39 25.0	5.222
9	16 25 47.93	2.7817	26 6 10.3	4.237	9	18 39 5.72	2.6927	25 34 6.2	5.403
10	16 28 34.93	2.7848	26 10 18.5	4.036	10	18 41 47.09	2.6861	25 28 36.7	5.581
11	16 31 22.11	2.7877	26 14 14.6	3.833	11	18 44 28.05	2.6793	25 22 56.5	5.759
12	16 34 9.46	2.7904	26 17 58.5	3.630	12	18 47 8.60	2.6724	25 17 5.6	5.936
13	16 36 56.96	2.7929	26 21 30.2	3.427	13	18 49 48.74	2.6656	25 11 4.2	6.110
14	16 39 44.61	2.7952	26 24 49.7	3.223	14	18 52 28.47	2.6586	25 4 52.4	6.282
15	16 42 32.39	2.7973	26 27 57.0	3.019	15	18 55 7.77	2.6514	24 58 30.3	6.453
16	16 45 20.29	2.7992	26 30 52.0	2.813	16	18 57 46.63	2.6441	24 51 58.0	6.622
17	16 48 8.29	2.8008	26 33 34.6	2.607	17	19 0 25.06	2.6367	24 45 15.6	6.790
18	16 50 56.39	2.8022	26 36 4.8	2.400	18	19 3 3.04	2.6292	24 38 23.2	6.956
19	16 53 44.56	2.8034	26 38 22.6	2.194	19	19 5 40.56	2.6215	24 31 20.9	7.119
20	16 56 32.80	2.8045	26 40 28.0	1.987	20	19 8 17.62	2.6138	24 24 8.9	7.281
21	16 59 21.10	2.8053	26 42 21.0	1.779	21	19 10 54.22	2.6061	24 16 47.2	7.441
22	17 2 9.43	2.8058	26 44 1.5	1.571	22	19 13 30.35	2.5982	24 9 16.0	7.599
23	17 4 57.79	2.8062	S. 26 45 29.5	1.362	23	19 16 6.00	2.5902	S. 24 1 35.3	7.756
MONDAY 14.					WEDNESDAY 16.				
0	17 7 46.17	2.8063	S. 26 46 45.0	1.154	0	19 18 41.17	2.5822	S. 23 53 45.3	7.910
1	17 10 34.55	2.8068	26 47 48.0	0.947	1	19 21 15.86	2.5740	23 45 46.1	8.062
2	17 13 22.91	2.8072	26 48 38.6	0.739	2	19 23 50.05	2.5658	23 37 37.9	8.212
3	17 16 11.25	2.8073	26 49 16.7	0.531	3	19 26 23.75	2.5575	23 29 20.7	8.360
4	17 18 59.55	2.8074	26 49 42.3	0.323	4	19 28 56.95	2.5492	23 20 54.7	8.506
5	17 21 47.79	2.8075	26 49 55.5	- 0.116	5	19 31 29.65	2.5408	23 12 20.0	8.651
6	17 24 35.97	2.8075	26 49 56.2	+ 0.092	6	19 34 1.85	2.5324	23 3 36.6	8.793
7	17 27 24.07	2.8079	26 49 44.5	0.299	7	19 36 33.54	2.5239	22 54 44.8	8.933
8	17 30 12.08	2.7992	26 49 20.4	0.506	8	19 39 4.72	2.5153	22 45 44.6	9.072
9	17 32 59.98	2.7973	26 48 43.8	0.712	9	19 41 35.38	2.5068	22 36 36.2	9.208
10	17 35 47.76	2.7952	26 47 54.9	0.917	10	19 44 5.53	2.4982	22 27 19.7	9.342
11	17 38 35.41	2.7930	26 46 53.7	1.122	11	19 46 35.16	2.4895	22 17 55.2	9.474
12	17 41 22.92	2.7905	26 45 40.2	1.327	12	19 49 4.27	2.4808	22 8 22.8	9.604
13	17 44 10.27	2.7877	26 44 14.4	1.532	13	19 51 32.86	2.4721	21 58 42.7	9.732
14	17 46 57.45	2.7847	26 42 36.4	1.735	14	19 54 0.93	2.4634	21 48 55.0	9.858
15	17 49 44.44	2.7816	26 40 46.2	1.938	15	19 56 28.47	2.4547	21 38 59.7	9.982
16	17 52 31.24	2.7782	26 38 43.9	2.140	16	19 58 55.49	2.4460	21 28 57.1	10.104
17	17 55 17.83	2.7747	26 36 29.4	2.342	17	20 1 21.99	2.4372	21 18 47.2	10.225
18	17 58 4.21	2.7710	26 34 2.9	2.542	18	20 3 47.96	2.4285	21 8 30.1	10.343
19	18 0 50.35	2.7670	26 31 24.4	2.741	19	20 6 13.41	2.4197	20 58 6.0	10.458
20	18 3 36.25	2.7628	26 28 34.0	2.938	20	20 8 38.33	2.4110	20 47 35.1	10.572
21	18 6 21.89	2.7585	26 25 31.8	3.135	21	20 11 2.73	2.4022	20 36 57.4	10.684
22	18 9 7.27	2.7540	26 22 17.8	3.332	22	20 13 26.60	2.3935	20 26 13.0	10.794
23	18 11 52.37	2.7492	26 18 52.0	3.527	23	20 15 49.95	2.3847	20 15 22.1	10.902
24	18 14 37.17	2.7442	S. 26 15 14.6	3.720	24	20 18 12.77	2.3760	S. 20 4 24.8	11.008

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 17.					SATURDAY 19.				
0	20 18 12.77	2.3760	S. 20 4 24.8	11.008	0	22 3 4.89	2.0187	S. 9 49 13.1	13.989
1	20 20 35.07	2.3673	19 53 21.2	11.112	1	22 5 5.85	2.0132	9 35 13.0	14.014
2	20 22 56.85	2.3587	19 42 11.4	11.213	2	22 7 6.48	2.0077	9 21 11.4	14.038
3	20 25 18.11	2.3500	19 30 55.6	11.312	3	22 9 6.77	2.0022	9 7 8.4	14.061
4	20 27 38.85	2.3414	19 19 33.9	11.410	4	22 11 6.74	1.9968	8 53 4.1	14.082
5	20 29 59.08	2.3328	19 8 6.4	11.507	5	22 13 6.39	1.9916	8 38 58.6	14.101
6	20 32 18.79	2.3242	18 56 33.1	11.601	6	22 15 5.73	1.9864	8 24 52.0	14.119
7	20 34 37.99	2.3157	18 44 54.3	11.693	7	22 17 4.76	1.9813	8 10 44.3	14.137
8	20 36 56.68	2.3072	18 33 10.0	11.783	8	22 19 3.49	1.9763	7 56 35.5	14.154
9	20 39 14.86	2.2988	18 21 20.3	11.872	9	22 21 1.92	1.9714	7 42 25.8	14.169
10	20 41 32.54	2.2904	18 9 25.4	11.958	10	22 23 0.06	1.9667	7 28 15.2	14.184
11	20 43 49.71	2.2820	17 57 25.4	12.042	11	22 24 57.92	1.9619	7 14 3.7	14.197
12	20 46 6.38	2.2737	17 45 20.4	12.125	12	22 26 55.49	1.9572	6 59 51.5	14.209
13	20 48 22.56	2.2655	17 33 10.4	12.206	13	22 28 52.78	1.9527	6 45 38.6	14.220
14	20 50 38.24	2.2573	17 20 55.7	12.284	14	22 30 49.81	1.9482	6 31 25.1	14.230
15	20 52 53.43	2.2491	17 8 36.3	12.362	15	22 32 46.57	1.9438	6 17 11.0	14.239
16	20 55 8.13	2.2410	16 56 12.3	12.437	16	22 34 43.07	1.9395	6 2 56.4	14.247
17	20 57 22.35	2.2329	16 43 43.9	12.510	17	22 36 39.31	1.9353	5 48 41.4	14.253
18	20 59 36.08	2.2248	16 31 11.1	12.582	18	22 38 35.31	1.9312	5 34 26.1	14.258
19	21 1 49.33	2.2169	16 18 34.1	12.652	19	22 40 31.06	1.9272	5 20 10.5	14.263
20	21 4 2.11	2.2091	16 5 52.9	12.720	20	22 42 26.57	1.9233	5 5 54.6	14.268
21	21 6 14.43	2.2014	15 53 7.7	12.787	21	22 44 21.85	1.9194	4 51 38.4	14.271
22	21 8 26.28	2.1937	15 40 18.5	12.852	22	22 46 16.90	1.9157	4 37 22.1	14.272
23	21 10 37.67	2.1859	S. 15 27 25.5	12.914	23	22 48 11.73	1.9120	S. 4 23 5.8	14.272
FRIDAY 18.					SUNDAY 20.				
0	21 12 48.59	2.1782	S. 15 14 28.8	12.975	0	22 50 6.34	1.9084	S. 4 8 49.5	14.271
1	21 14 59.06	2.1707	15 1 28.5	13.035	1	22 52 0.74	1.9049	3 54 33.3	14.270
2	21 17 9.08	2.1633	14 48 24.6	13.093	2	22 53 54.93	1.9014	3 40 17.1	14.269
3	21 19 18.66	2.1559	14 35 17.3	13.149	3	22 55 48.91	1.8981	3 26 1.0	14.267
4	21 21 27.79	2.1486	14 22 6.7	13.204	4	22 57 42.70	1.8948	3 11 45.1	14.265
5	21 23 36.49	2.1413	14 8 52.8	13.258	5	22 59 36.29	1.8917	2 57 29.5	14.262
6	21 25 44.75	2.1341	13 55 35.7	13.310	6	23 1 29.70	1.8886	2 43 14.3	14.259
7	21 27 52.58	2.1270	13 42 15.6	13.360	7	23 3 22.92	1.8856	2 28 59.5	14.244
8	21 29 59.99	2.1200	13 28 52.5	13.408	8	23 5 15.97	1.8827	2 14 45.0	14.237
9	21 32 6.98	2.1131	13 15 26.6	13.455	9	23 7 8.85	1.8799	2 0 31.0	14.229
10	21 34 13.56	2.1062	13 1 57.9	13.501	10	23 9 1.56	1.8772	1 46 17.5	14.220
11	21 36 19.73	2.0994	12 48 26.5	13.545	11	23 10 54.11	1.8745	1 32 4.6	14.210
12	21 38 25.49	2.0927	12 34 52.5	13.587	12	23 12 46.50	1.8719	1 17 52.3	14.199
13	21 40 30.85	2.0861	12 21 16.0	13.628	13	23 14 38.74	1.8693	1 3 40.7	14.187
14	21 42 35.82	2.0796	12 7 37.1	13.668	14	23 16 30.84	1.8671	0 49 29.8	14.175
15	21 44 40.40	2.0731	11 53 55.8	13.707	15	23 18 22.79	1.8647	0 35 19.7	14.162
16	21 46 44.59	2.0667	11 40 12.3	13.743	16	23 20 14.60	1.8623	0 21 10.4	14.148
17	21 48 48.41	2.0605	11 26 26.6	13.778	17	23 22 6.29	1.8604	S. 0 7 2.0	14.133
18	21 50 51.85	2.0543	11 12 38.9	13.812	18	23 23 57.85	1.8583	N. 0 7 5.5	14.117
19	21 52 54.92	2.0482	10 58 49.2	13.845	19	23 25 49.29	1.8563	0 21 12.0	14.100
20	21 54 57.63	2.0421	10 44 57.5	13.877	20	23 27 40.61	1.8544	0 35 17.5	14.083
21	21 56 59.97	2.0361	10 31 4.0	13.907	21	23 29 31.82	1.8527	0 49 22.0	14.066
22	21 59 1.96	2.0302	10 17 8.7	13.936	22	23 31 22.93	1.8509	1 3 25.4	14.047
23	22 1 3.60	2.0244	10 3 11.7	13.963	23	23 33 13.93	1.8492	1 17 27.6	14.027
24	22 3 4.89	2.0187	S. 9 49 13.1	13.989	24	23 35 4.83	1.8476	N. 1 31 28.7	14.007

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 21.					WEDNESDAY 23.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
1	23 35 4.83	1.8476	N. 1 31 28.7	14.007	1	1 3 23.79	1.8596	N. 12 7 17.2	12.828
2	23 36 55.64	1.8462	1 45 28.5	13.986	2	1 5 15.42	1.8615	12 19 29.3	12.175
3	23 38 46.37	1.8448	1 59 27.0	13.964	3	1 7 7.17	1.8635	12 31 38.2	12.122
4	23 40 37.01	1.8434	2 13 24.2	13.942	4	1 8 59.04	1.8655	12 43 43.9	12.067
5	23 42 27.58	1.8422	2 27 20.1	13.919	5	1 10 51.03	1.8676	12 55 46.3	12.012
6	23 44 18.07	1.8409	2 41 14.5	13.895	6	1 12 43.15	1.8697	13 7 45.3	11.955
7	23 46 8.49	1.8398	2 55 7.5	13.871	7	1 14 35.39	1.8718	13 19 40.9	11.898
8	23 47 58.85	1.8388	3 8 59.0	13.845	8	1 16 27.77	1.8741	13 31 33.1	11.842
9	23 49 49.15	1.8378	3 22 48.9	13.819	9	1 18 20.29	1.8764	13 43 21.9	11.784
10	23 51 39.39	1.8370	3 36 37.3	13.792	10	1 20 12.94	1.8787	13 55 7.2	11.725
11	23 53 29.59	1.8362	3 50 24.0	13.764	11	1 22 5.74	1.8812	14 6 48.9	11.666
12	23 55 19.74	1.8355	4 4 9.0	13.737	12	1 23 58.69	1.8837	14 18 27.1	11.607
13	23 57 9.85	1.8349	4 17 52.4	13.708	13	1 25 51.79	1.8862	14 30 1.7	11.546
14	23 58 59.93	1.8344	4 31 34.0	13.678	14	1 27 45.04	1.8888	14 41 32.6	11.484
15	0 0 49.98	1.8338	4 45 13.8	13.648	15	1 29 38.45	1.8915	14 52 59.8	11.422
16	0 2 39.99	1.8333	4 58 51.8	13.618	16	1 31 32.02	1.8942	15 4 23.3	11.360
17	0 4 29.98	1.8331	5 12 27.9	13.586	17	1 33 25.75	1.8969	15 15 43.0	11.296
18	0 6 19.96	1.8329	5 26 2.1	13.554	18	1 35 19.65	1.8996	15 26 58.8	11.232
19	0 8 9.92	1.8327	5 39 34.4	13.522	19	1 37 13.71	1.9024	15 38 10.8	11.167
20	0 9 59.88	1.8326	5 53 4.7	13.488	20	1 39 7.94	1.9053	15 49 18.9	11.102
21	0 11 49.83	1.8325	6 6 32.9	13.453	21	1 41 2.35	1.9083	16 0 23.0	11.035
22	0 13 39.78	1.8326	6 19 59.0	13.418	22	1 42 56.94	1.9113	16 11 23.1	10.968
23	0 15 29.74	1.8327	6 33 23.0	13.383	23	1 44 51.71	1.9143	16 22 19.2	10.901
24	0 17 19.70	1.8328	N. 6 46 44.9	13.347	24	1 46 46.66	1.9173	N. 16 33 11.2	10.832
TUESDAY 22.					THURSDAY 24.				
0	0 19 9.67	1.8330	N. 7 0 4.6	13.309	0	1 48 41.79	1.9204	N. 16 43 59.1	10.763
1	0 20 59.66	1.8334	7 13 22.0	13.272	1	1 50 37.11	1.9236	16 54 42.8	10.693
2	0 22 49.68	1.8338	7 26 37.2	13.234	2	1 52 32.62	1.9268	17 5 22.3	10.623
3	0 24 39.72	1.8342	7 39 50.1	13.196	3	1 54 28.33	1.9301	17 15 57.6	10.552
4	0 26 29.79	1.8347	7 53 0.7	13.156	4	1 56 24.23	1.9333	17 26 28.6	10.480
5	0 28 19.89	1.8353	8 6 8.8	13.115	5	1 58 20.33	1.9367	17 36 55.2	10.408
6	0 30 10.03	1.8361	8 19 14.5	13.074	6	2 0 16.63	1.9400	17 47 17.5	10.335
7	0 32 0.22	1.8368	8 32 17.7	13.033	7	2 2 13.13	1.9434	17 57 35.4	10.261
8	0 33 50.45	1.8376	8 45 18.4	12.991	8	2 4 9.84	1.9468	18 7 48.8	10.185
9	0 35 40.73	1.8385	8 58 16.6	12.948	9	2 6 6.75	1.9502	18 17 57.6	10.109
10	0 37 31.07	1.8395	9 11 12.2	12.905	10	2 8 3.87	1.9538	18 28 1.9	10.033
11	0 39 21.47	1.8405	9 24 5.2	12.861	11	2 10 1.21	1.9574	18 38 1.6	9.957
12	0 41 11.93	1.8416	9 36 55.5	12.816	12	2 11 58.76	1.9610	18 47 56.7	9.879
13	0 43 2.46	1.8427	9 49 43.1	12.770	13	2 13 56.53	1.9646	18 57 47.1	9.800
14	0 44 53.06	1.8439	10 2 27.9	12.724	14	2 15 54.51	1.9682	19 7 32.7	9.721
15	0 46 43.73	1.8452	10 15 10.0	12.678	15	2 17 52.71	1.9718	19 17 13.6	9.641
16	0 48 34.48	1.8466	10 27 49.3	12.631	16	2 19 51.13	1.9755	19 26 49.6	9.559
17	0 50 25.32	1.8480	10 40 25.7	12.583	17	2 21 49.77	1.9792	19 36 20.7	9.478
18	0 52 16.24	1.8494	10 52 59.2	12.534	18	2 23 48.64	1.9830	19 45 47.0	9.396
19	0 54 7.25	1.8510	11 5 29.8	12.485	19	2 25 47.73	1.9868	19 55 8.3	9.313
20	0 55 58.36	1.8526	11 17 57.4	12.435	20	2 27 47.05	1.9906	20 4 24.6	9.229
21	0 57 49.56	1.8542	11 30 22.0	12.384	21	2 29 46.60	1.9944	20 13 35.8	9.144
22	0 59 40.86	1.8559	11 42 43.5	12.333	22	2 31 46.38	1.9982	20 22 41.9	9.059
23	1 1 32.27	1.8577	11 55 1.9	12.281	23	2 33 46.39	2.0022	20 31 42.9	8.973
24	1 3 23.79	1.8596	N. 12 7 17.2	12.228	24	2 35 46.64	2.0061	N. 20 40 38.7	8.887

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 25.					SUNDAY 27.				
0	h m s	"	N. 20 40 38.7	8.887	0	h m s	"	N. 25 52 40.7	3.833
1	2 35 46.64	2.0061	20 49 29.3	8.799	1	4 16 36.19	2.1892	25 56 27.0	3.711
2	2 37 47.12	2.0099	20 58 14.6	8.710	2	4 18 47.64	2.1983	26 0 6.0	3.588
3	2 39 47.83	2.0138	21 6 54.5	8.621	3	4 20 59.27	2.1954	26 3 37.6	3.465
4	2 41 48.78	2.0178	21 15 29.1	8.532	4	4 23 11.09	2.1985	26 7 1.8	3.341
5	2 43 49.97	2.0218	21 23 58.3	8.441	5	4 25 23.09	2.2015	26 10 18.5	3.216
6	2 45 51.40	2.0257	21 32 22.0	8.349	6	4 27 35.27	2.2044	26 13 27.7	3.091
7	2 47 53.06	2.0297	21 40 40.2	8.257	7	4 29 47.62	2.2072	26 16 29.4	2.965
8	2 49 54.96	2.0337	21 48 52.8	8.164	8	4 32 0.14	2.2100	26 19 23.5	2.839
9	2 51 57.10	2.0377	21 56 59.9	8.071	9	4 34 12.82	2.2128	26 22 10.1	2.713
10	2 53 59.49	2.0418	22 5 1.3	7.976	10	4 36 25.67	2.2155	26 24 49.1	2.586
11	2 56 2.12	2.0458	22 12 57.0	7.880	11	4 38 38.68	2.2181	26 27 20.4	2.458
12	2 58 4.98	2.0498	22 20 46.9	7.784	12	4 40 51.84	2.2206	26 29 44.0	2.329
13	3 0 8.09	2.0538	22 28 31.1	7.687	13	4 43 5.15	2.2231	26 31 59.9	2.201
14	3 2 11.44	2.0579	22 36 9.4	7.589	14	4 45 18.61	2.2255	26 34 8.1	2.072
15	3 4 15.04	2.0619	22 43 41.8	7.491	15	4 47 32.21	2.2279	26 36 8.6	1.943
16	3 6 18.87	2.0658	22 51 8.3	7.392	16	4 49 45.96	2.2302	26 38 1.3	1.813
17	3 8 22.94	2.0699	22 58 28.8	7.292	17	4 51 59.84	2.2324	26 39 46.1	1.682
18	3 10 27.26	2.0740	23 5 43.4	7.192	18	4 54 13.85	2.2345	26 41 23.1	1.551
19	3 12 31.82	2.0780	23 12 51.9	7.090	19	4 56 27.98	2.2366	26 42 52.2	1.420
20	3 14 36.62	2.0820	23 19 54.2	6.988	20	4 58 42.24	2.2386	26 44 13.5	1.289
21	3 16 41.66	2.0860	23 26 50.4	6.885	21	5 0 56.61	2.2405	26 45 26.9	1.157
22	3 18 46.94	2.0900	23 33 40.4	6.781	22	5 3 11.10	2.2424	26 46 32.4	1.025
23	3 20 52.46	2.0940	N. 23 40 24.1	6.677	23	5 5 25.70	2.2442	N. 26 47 29.9	0.892
24	3 22 58.22	2.0980				5 7 40.40	2.2459		
SATURDAY 26.					MONDAY 28.				
0	h m s	"	N. 23 47 1.6	6.572	0	h m s	"	N. 26 48 19.5	0.760
1	3 25 4.22	2.1020	23 53 32.8	6.466	1	5 9 55.21	2.2476	26 49 1.1	0.627
2	3 27 10.46	2.1059	23 59 57.5	6.358	2	5 12 10.11	2.2491	26 49 34.7	0.493
3	3 29 16.93	2.1098	24 6 15.8	6.251	3	5 14 25.10	2.2505	26 50 0.3	0.360
4	3 31 23.64	2.1138	24 12 27.7	6.143	4	5 16 40.17	2.2519	26 50 17.9	0.226
5	3 33 30.58	2.1177	24 18 33.0	6.034	5	5 18 55.33	2.2532	26 50 27.4	+ 0.092
6	3 35 37.76	2.1216	24 24 31.8	5.925	6	5 21 10.56	2.2544	26 50 28.9	- 0.042
7	3 37 45.17	2.1254	24 30 24.0	5.814	7	5 23 25.86	2.2556	26 50 22.3	0.177
8	3 39 52.81	2.1292	24 36 9.5	5.702	8	5 25 41.23	2.2567	26 50 7.6	0.312
9	3 42 0.68	2.1330	24 41 48.4	5.590	9	5 27 56.66	2.2577	26 49 44.9	0.446
10	3 44 8.77	2.1368	24 47 20.5	5.478	10	5 30 12.15	2.2586	26 49 14.1	0.581
11	3 46 17.09	2.1406	24 52 45.8	5.366	11	5 32 27.69	2.2594	26 48 35.2	0.717
12	3 48 25.64	2.1443	24 58 4.4	5.254	12	5 34 43.28	2.2602	26 47 48.1	0.852
13	3 50 34.41	2.1480	25 3 16.1	5.137	13	5 36 58.92	2.2609	26 46 52.9	0.987
14	3 52 43.40	2.1517	25 8 20.9	5.022	14	5 39 14.59	2.2614	26 45 49.6	1.122
15	3 54 52.61	2.1553	25 13 18.7	4.906	15	5 41 30.29	2.2619	26 44 38.2	1.257
16	3 57 0.03	2.1588	25 18 9.6	4.790	16	5 43 46.02	2.2623	26 43 18.7	1.393
17	3 59 11.67	2.1624	25 22 53.5	4.672	17	5 46 1.77	2.2627	26 41 51.0	1.529
18	4 1 21.52	2.1659	25 27 30.3	4.554	18	5 48 17.54	2.2630	26 40 15.2	1.665
19	4 3 31.58	2.1693	25 32 0.0	4.436	19	5 50 33.33	2.2632	26 38 31.2	1.801
20	4 5 41.85	2.1728	25 36 22.6	4.317	20	5 52 49.12	2.2638	26 36 39.1	1.936
21	4 7 52.32	2.1762	25 40 38.0	4.197	21	5 55 4.91	2.2632	26 34 38.9	2.071
22	4 10 2.99	2.1795	25 44 46.2	4.076	22	5 57 20.71	2.2632	26 32 30.6	2.207
23	4 12 13.86	2.1828	25 48 47.1	3.954	23	5 59 36.50	2.2630	26 30 14.1	2.342
24	4 14 24.93	2.1861	N. 25 52 40.7	3.833	24	6 1 52.27	2.2628		
	4 16 36.19	2.1892				6 4 8.03	2.2625	N. 26 27 49.5	2.477

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 29.					THURSDAY, JULY 1.				
0	h m s	s	N. 26 27 49.5	"	0	h m s	s	N. 21 58 34.2	"
1	6 4 8.03	2.2685	26 25 16.8	2.477	1	7 51 3.06	2.1721		8.559
2	6 6 23.77	2.2621	26 22 36.0	2.612	PHASES OF THE MOON.				
3	6 8 39.48	2.2616	26 19 47.1	2.747					
4	6 10 55.16	2.2610	26 16 50.1	2.882					
5	6 13 10.80	2.2604	26 13 45.0	3.017					
6	6 15 26.41	2.2598	26 10 31.8	3.152					
7	6 17 41.98	2.2591	26 7 10.6	3.287					
8	6 19 57.50	2.2584	26 3 41.3	3.421					
9	6 22 12.96	2.2578	26 0 4.0	3.555					
10	6 24 28.36	2.2562	25 56 18.7	3.688					
11	6 26 43.70	2.2551	25 52 25.4	3.822					
12	6 28 58.97	2.2539	25 48 24.0	3.956	☾ First Quarter . . . June 7 19 2.4 ○ Full Moon 14 9 1.5 ☾ Last Quarter 21 11 23.9 ● New Moon 29 14 55.2				
13	6 31 14.17	2.2527	25 44 14.7	4.089					
14	6 33 29.30	2.2514	25 39 57.5	4.221					
15	6 35 44.34	2.2500	25 35 32.3	4.353					
16	6 37 59.30	2.2486	25 30 59.2	4.486					
17	6 40 14.17	2.2471	25 26 18.2	4.617					
18	6 42 28.95	2.2456	25 21 29.4	4.748					
19	6 44 43.64	2.2440	25 16 32.8	4.878					
20	6 46 58.23	2.2423	25 11 28.3	5.009					
21	6 49 12.71	2.2404	25 6 16.0	5.140					
22	6 51 27.08	2.2386	25 0 56.0	5.269	☾ Perigee June 13 3.5 ☾ Apogee 25 10.5				
23	6 53 41.34	2.2367	N. 24 55 28.2	5.398					
24	6 55 55.49	2.2348		5.527					
WEDNESDAY 30.									
0	6 58 9.52	2.2328	N. 24 49 52.7	5.655					
1	7 0 23.43	2.2308	24 44 9.6	5.782					
2	7 2 37.21	2.2287	24 38 18.8	5.911					
3	7 4 50.87	2.2265	24 32 20.3	6.038					
4	7 7 4.39	2.2242	24 26 14.2	6.164					
5	7 9 17.78	2.2220	24 20 0.6	6.289					
6	7 11 31.03	2.2197	24 13 39.5	6.414					
7	7 13 44.14	2.2173	24 7 10.9	6.539					
8	7 15 57.10	2.2148	24 0 34.8	6.663					
9	7 18 9.92	2.2124	23 53 51.3	6.786					
10	7 20 22.59	2.2099	23 47 0.4	6.909					
11	7 22 35.11	2.2074	23 40 2.2	7.032					
12	7 24 47.48	2.2048	23 32 56.6	7.154					
13	7 26 59.69	2.2022	23 25 43.7	7.274					
14	7 29 11.74	2.1995	23 18 23.7	7.393					
15	7 31 23.63	2.1968	23 10 56.5	7.513					
16	7 33 35.36	2.1941	23 3 22.1	7.633					
17	7 35 46.92	2.1913	22 55 40.6	7.752					
18	7 37 58.31	2.1885	22 47 51.9	7.870					
19	7 40 9.54	2.1857	22 39 56.2	7.986					
20	7 42 20.59	2.1828	22 31 53.6	8.101					
21	7 44 31.47	2.1799	22 23 44.1	8.216					
22	7 46 42.18	2.1770	22 15 27.7	8.331					
23	7 48 52.71	2.1740	22 7 4.4	8.446					
24	7 51 3.06	2.1711	N. 21 58 34.2	8.559					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
2	SUN W.	22 5 56	3395	23 28 18	3380	24 50 57	3365	26 13 53	3351
	Regulus E.	54 20 43	2962	52 49 43	2956	51 18 35	2950	49 47 19	2943
	JUPITER E.	58 7 36	3005	56 37 29	2998	55 7 14	2992	53 36 51	2986
	Spica E.	108 24 17	2963	106 53 18	2957	105 22 11	2950	103 50 55	2943
3	SUN W.	33 12 13	3293	34 36 33	3281	36 1 7	3270	37 25 54	3259
	Regulus E.	42 8 56	2909	40 36 49	2902	39 4 33	2895	37 32 8	2887
	JUPITER E.	46 3 0	2954	44 31 49	2946	43 0 29	2940	41 29 1	2933
	Spica E.	96 12 25	2907	94 40 15	2899	93 7 55	2891	91 35 25	2883
4	SUN W.	44 32 58	3204	45 59 2	3193	47 25 19	3182	48 51 50	3171
	Spica E.	83 50 16	2840	82 16 40	2831	80 42 53	2821	79 8 53	2812
	SATURN E.	117 32 42	2852	115 59 22	2842	114 25 49	2831	112 52 2	2821
5	SUN W.	56 7 52	3111	57 35 48	3099	59 3 59	3087	60 32 25	3074
	Pollux W.	20 33 15	2900	22 5 34	2870	23 38 31	2845	25 12 1	2821
	Spica E.	71 15 43	2762	69 40 25	2739	68 4 52	2740	66 29 5	2729
	SATURN E.	104 59 43	2767	103 24 32	2756	101 49 7	2745	100 13 27	2733
6	SUN W.	67 58 34	3007	69 28 38	2995	70 58 59	2980	72 29 37	2965
	Pollux W.	33 6 37	2722	34 42 47	2705	36 19 20	2689	37 56 15	2672
	Spica E.	58 26 24	2670	56 49 4	2658	55 11 28	2646	53 33 35	2633
	SATURN E.	92 11 10	2673	90 33 54	2660	88 56 21	2649	87 18 32	2635
7	SUN W.	80 7 24	2891	81 39 54	2876	83 12 43	2862	84 45 51	2845
	Pollux W.	46 6 21	2592	47 45 27	2576	49 24 55	2561	51 4 44	2545
	MARS W.	25 52 18	2760	27 27 38	2745	29 3 18	2729	30 39 19	2714
	Spica E.	45 19 50	2569	43 40 12	2556	42 0 16	2542	40 20 1	2529
	SATURN E.	79 5 1	2570	77 25 25	2556	75 45 30	2543	74 5 17	2530
	Antares E.	91 4 49	2557	89 24 55	2543	87 44 42	2529	86 4 9	2515
8	SUN W.	92 36 38	2767	94 11 49	2751	95 47 21	2735	97 23 14	2719
	Pollux W.	59 29 16	2467	61 11 16	2451	62 53 38	2436	64 36 21	2420
	MARS W.	38 44 33	2636	40 22 39	2621	42 1 6	2605	43 39 54	2589
	Regulus W.	22 26 54	2465	24 8 56	2448	25 51 23	2430	27 34 15	2413
	SATURN E.	65 39 29	2462	63 57 22	2449	62 14 57	2436	60 32 13	2422
	Antares E.	77 36 24	2442	75 53 49	2428	74 10 54	2413	72 27 38	2398
9	SUN W.	105 27 58	2640	107 5 58	2624	108 44 20	2609	110 23 3	2594
	Pollux W.	73 15 30	2344	75 0 25	2329	76 45 42	2314	78 31 21	2300
	MARS W.	51 59 19	2511	53 40 17	2496	55 21 36	2481	57 3 16	2466
	Regulus W.	36 14 24	2334	37 59 34	2318	39 45 7	2303	41 31 2	2288
	JUPITER W.	31 48 4	2387	33 31 58	2370	35 16 16	2353	37 0 58	2337
	SATURN E.	51 53 54	2359	50 9 21	2348	48 24 31	2337	46 39 25	2326
	Antares E.	63 45 55	2324	62 0 31	2309	60 14 45	2295	58 28 38	2281
10	SUN W.	118 41 45	2520	120 22 30	2507	122 3 34	2494	123 44 56	2480
	Pollux W.	87 24 50	2230	89 12 33	2216	91 0 36	2204	92 48 58	2191
	MARS W.	65 36 50	2394	67 20 34	2380	69 4 38	2366	70 49 2	2353
	Regulus W.	50 25 59	2217	52 14 1	2204	54 2 23	2190	55 51 5	2178
	JUPITER W.	45 50 8	2262	47 37 4	2248	49 24 20	2235	51 11 56	2221
	Antares E.	49 32 50	2211	47 44 39	2198	45 56 9	2185	44 7 19	2172

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
		° ' "		° ' "		° ' "		° ' "	
2	SUN W.	27 37 5	3338	29 0 32	3387	30 24 12	3315	31 48 6	3304
	Regulus E.	48 15 55	2937	46 44 23	2931	45 12 43	2924	43 40 54	2916
	JUPITER E.	52 6 21	2980	50 35 43	2973	49 4 57	2967	47 34 3	2960
	Spica E.	102 19 31	2936	100 47 58	2929	99 16 16	2922	97 44 25	2915
3	SUN W.	38 50 53	3248	40 16 5	3237	41 41 30	3227	43 7 7	3215
	Regulus E.	35 59 33	2880	34 26 49	2873	32 53 55	2865	31 20 51	2857
	JUPITER E.	39 57 24	2926	38 25 38	2919	36 53 43	2912	35 21 39	2904
	Spica E.	90 2 45	2875	88 29 54	2867	86 56 53	2858	85 23 40	2849
4	SUN W.	50 18 34	3159	51 45 32	3148	53 12 44	3135	54 40 11	3123
	Spica E.	77 34 41	2803	76 0 17	2792	74 25 39	2782	72 50 48	2772
	SATURN E.	111 18 2	2811	109 43 48	2801	108 9 21	2789	106 34 39	2779
5	SUN W.	62 1 6	3061	63 30 3	3047	64 59 17	3034	66 28 47	3021
	Pollux W.	26 46 2	2799	28 20 31	2778	29 55 28	2759	31 30 50	2740
	Spica E.	64 53 4	2717	63 16 47	2706	61 40 15	2694	60 3 27	2683
	SATURN E.	98 37 31	2722	97 1 20	2710	95 24 53	2698	93 48 10	2685
6	SUN W.	74 0 34	2930	75 31 49	2916	77 3 22	2902	78 35 13	2906
	Pollux W.	39 33 33	2655	41 11 13	2640	42 49 14	2624	44 27 37	2608
	Spica E.	51 55 25	2622	50 16 58	2607	48 38 13	2594	46 59 10	2582
	SATURN E.	85 40 25	2623	84 2 1	2610	82 23 19	2596	80 44 19	2583
7	SUN W.	86 19 20	2830	87 53 9	2815	89 27 18	2798	91 1 48	2783
	Pollux W.	52 44 55	2529	54 25 28	2514	56 6 22	2498	57 47 38	2482
	MARS W.	32 15 40	2698	33 52 22	2683	35 29 25	2668	37 6 48	2652
	Spica E.	38 39 28	2515	36 58 36	2502	35 17 26	2489	33 35 57	2477
	SATURN E.	72 24 45	2516	70 43 54	2503	69 2 45	2489	67 21 16	2476
	Antares E.	84 23 16	2501	82 42 4	2486	81 0 31	2472	79 18 38	2457
8	SUN W.	98 59 29	2704	100 36 4	2687	102 13 1	2672	103 50 19	2656
	Pollux W.	66 19 27	2405	68 2 55	2389	69 46 45	2374	71 30 57	2359
	MARS W.	45 19 4	2574	46 58 35	2558	48 38 28	2542	50 18 43	2527
	Regulus W.	29 17 31	2397	31 1 10	2381	32 45 12	2365	34 29 37	2350
	SATURN E.	58 49 10	2409	57 5 48	2396	55 22 8	2384	53 38 10	2371
	Antares E.	70 44 0	2383	69 0 1	2368	67 15 40	2353	65 30 58	2339
9	SUN W.	112 2 6	2579	113 41 30	2564	115 21 15	2549	117 1 20	2535
	Pollux W.	80 17 21	2285	82 3 42	2271	83 50 24	2257	85 37 27	2243
	MARS W.	58 45 17	2451	60 27 39	2436	62 10 22	2422	63 53 26	2408
	Regulus W.	43 17 19	2274	45 3 57	2259	46 50 57	2245	48 38 18	2231
	JUPITER W.	38 46 3	2322	40 31 31	2307	42 17 21	2291	44 3 34	2277
	SATURN E.	44 54 4	2316	43 8 28	2307	41 22 39	2299	39 36 38	2291
	Antares E.	56 42 10	2266	54 55 21	2252	53 8 11	2239	51 20 41	2225
10	SUN W.	125 26 37	2468	127 8 35	2455	128 50 51	2444	130 33 23	2432
	Pollux W.	94 37 39	2179	96 26 38	2167	98 15 55	2156	100 5 29	2145
	MARS W.	72 33 44	2340	74 18 45	2328	76 4 4	2316	77 49 40	2304
	Regulus W.	57 40 6	2165	59 29 26	2153	61 19 4	2141	63 9 0	2130
	JUPITER W.	52 59 52	2208	54 48 7	2196	56 36 41	2184	58 25 33	2172
	Antares E.	42 18 10	2160	40 28 42	2149	38 38 57	2137	36 48 54	2126

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
10	α Aquilæ E.	102 35 50	2858	101 2 37	2837	99 28 57	2817	97 54 51	2799
11	Pollux W.	101 55 20	2135	103 45 26	2124	105 35 48	2115	107 26 24	2106
	MARS W.	79 35 33	2294	81 21 42	2285	83 8 7	2272	84 54 47	2262
	Regulus W.	64 59 14	2119	66 49 44	2109	68 40 30	2099	70 31 31	2089
	JUPITER W.	60 14 42	2161	62 4 8	2151	63 53 50	2141	65 43 47	2131
	Antares E.	34 58 34	2115	33 7 58	2105	31 17 6	2095	29 25 59	2085
	α Aquilæ E.	89 59 5	2730	88 23 5	2721	86 46 53	2713	85 10 31	2707
	Fomalhaut E.	114 53 19	2564	113 13 35	2541	111 33 19	2520	109 52 34	2502
12	MARS W.	93 51 27	2223	95 39 20	2216	97 27 23	2211	99 15 34	2206
	Regulus W.	79 49 57	2051	81 42 12	2044	83 34 37	2039	85 27 10	2034
	JUPITER W.	74 56 56	2094	76 48 8	2086	78 39 29	2080	80 30 59	2075
	Spica W.	25 51 35	2075	27 43 13	2066	29 35 5	2057	31 27 10	2051
	α Aquilæ E.	77 7 27	2704	75 30 53	2709	73 54 25	2716	72 18 7	2726
	Fomalhaut E.	101 22 52	2429	99 39 58	2419	97 56 50	2410	96 13 29	2403
	α Pegasi E.	123 35 27	2285	121 49 5	2270	120 2 21	2256	118 15 16	2243
13	MARS W.	108 17 56	2192	110 6 35	2192	111 55 14	2192	113 43 53	2194
	Regulus W.	94 51 26	2021	96 44 28	2020	98 37 31	2021	100 30 33	2021
	JUPITER W.	89 49 57	2062	91 41 55	2061	93 33 54	2062	95 25 52	2062
	Spica W.	40 49 44	2030	42 42 31	2028	44 35 21	2028	46 28 12	2028
	α Aquilæ E.	64 20 58	2815	62 46 49	2842	61 13 15	2872	59 40 20	2907
	Fomalhaut E.	87 34 48	2387	85 50 54	2388	84 7 2	2391	82 23 14	2395
	α Pegasi E.	109 15 59	2202	107 27 34	2198	105 39 3	2194	103 50 27	2192
14	Regulus W.	109 55 2	2036	111 47 40	2042	113 40 9	2048	115 32 29	2054
	JUPITER W.	104 44 59	2078	106 36 32	2084	108 27 56	2090	110 19 11	2097
	Spica W.	55 51 59	2040	57 44 31	2046	59 36 54	2051	61 29 9	2057
	Fomalhaut E.	73 46 27	2439	72 3 48	2453	70 21 29	2469	68 39 32	2486
	α Pegasi E.	94 47 12	2198	92 58 42	2205	91 10 19	2208	89 22 4	2215
15	Spica W.	70 47 40	2099	72 38 41	2109	74 29 27	2120	76 19 56	2131
	SATURN W.	38 6 16	2160	39 55 44	2164	41 45 6	2170	43 34 19	2176
	Antares W.	24 56 49	2092	26 48 0	2103	28 38 55	2114	30 29 33	2125
	Fomalhaut E.	60 16 50	2606	58 38 3	2637	56 59 58	2671	55 22 39	2708
	α Pegasi E.	80 23 47	2263	78 36 53	2276	76 50 18	2289	75 4 3	2304
16	Spica W.	85 27 41	2198	87 16 12	2212	89 4 22	2227	90 52 9	2243
	SATURN W.	52 37 20	2226	54 25 9	2238	56 12 40	2251	57 59 51	2265
	Antares W.	39 38 3	2191	41 26 44	2206	43 15 2	2221	45 2 58	2237
	Fomalhaut E.	47 29 54	2250	45 58 38	2304	44 28 42	2362	43 0 11	2418
	α Pegasi E.	66 18 39	2393	64 34 54	2413	62 51 38	2436	61 8 54	2458
	α Arietis E.	108 18 16	2208	106 30 0	2223	104 42 6	2237	102 54 34	2253
	VENUS E.	113 56 38	2468	112 14 40	2484	110 33 4	2499	108 51 49	2515
17	Spica W.	99 45 8	2326	101 30 30	2344	103 15 26	2362	104 59 56	2379
	SATURN W.	66 50 29	2342	68 35 28	2357	70 20 4	2375	72 4 15	2391
	Antares W.	53 56 39	2320	55 42 9	2337	57 27 14	2355	59 11 53	2373
	α Pegasi E.	52 43 52	2593	51 4 47	2624	49 26 25	2657	47 48 47	2692
	α Arietis E.	94 2 48	2335	92 17 40	2353	90 32 57	2371	88 48 40	2388
	VENUS E.	100 31 27	2604	98 52 37	2622	97 14 12	2641	95 36 13	2660

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
10	α Aquilæ E.	96 20 22	2782	94 45 31	2767	93 10 20	2753	91 34 51	2741
11	Pollux W.	109 17 14	2098	111 8 17	2090	112 59 31	2083	114 50 56	2076
	MARS W.	86 41 42	2253	88 28 50	2245	90 16 11	2237	92 3 44	2230
	Regulus W.	72 22 47	2081	74 14 16	2072	76 5 58	2064	77 57 52	2057
	JUPITER W.	67 33 59	2122	69 24 25	2114	71 15 3	2105	73 5 54	2098
	Antares E.	27 34 37	2077	25 43 2	2068	23 51 14	2061	21 59 14	2054
	α Aquilæ E.	83 34 1	2703	81 57 25	2701	80 20 46	2700	78 44 6	2701
	Fomalhaut E.	108 11 23	2484	106 29 47	2467	104 47 48	2453	103 5 29	2441
12	MARS W.	101 3 52	2202	102 52 16	2198	104 40 46	2196	106 29 20	2194
	Regulus W.	87 19 51	2030	89 12 38	2027	91 5 30	2025	92 58 26	2022
	JUPITER W.	82 22 36	2072	84 14 19	2068	86 6 8	2065	87 58 1	2063
	Spica W.	33 19 25	2044	35 11 50	2040	37 4 22	2035	38 57 1	2033
	α Aquilæ E.	70 42 2	2738	69 6 13	2733	67 30 44	2721	65 55 38	2711
	Fomalhaut E.	94 29 58	2396	92 46 18	2392	91 2 32	2389	89 18 41	2387
	α Pegasi E.	116 27 53	2233	114 40 14	2223	112 52 21	2214	111 4 15	2208
13	MARS W.	115 32 30	2195	117 21 5	2198	119 9 36	2201	120 58 2	2205
	Regulus W.	102 23 34	2023	104 16 32	2025	106 9 27	2028	108 2 17	2022
	JUPITER W.	97 17 49	2064	99 9 43	2066	101 1 34	2070	102 53 20	2074
	Spica W.	48 21 3	2029	50 13 52	2030	52 6 39	2033	53 59 22	2037
	α Aquilæ E.	58 8 10	2946	56 36 49	2939	55 6 22	2938	53 36 56	2932
	Fomalhaut E.	80 39 32	2401	78 55 58	2408	77 12 34	2417	75 29 23	2427
	α Pegasi E.	102 1 47	2191	100 13 6	2192	98 24 26	2192	96 35 47	2195
14	Regulus W.	117 24 39	2062	119 16 37	2070	121 8 23	2078	122 59 56	2088
	JUPITER W.	112 10 15	2105	114 1 7	2113	115 51 47	2122	117 42 13	2131
	Spica W.	63 21 15	2064	65 13 10	2072	67 4 53	2080	68 56 23	2088
	Fomalhaut E.	66 57 59	2506	65 16 54	2527	63 36 19	2551	61 56 16	2577
	α Pegasi E.	87 33 59	2223	85 46 5	2231	83 58 24	2241	82 10 58	2251
15	Spica W.	78 10 8	2143	80 0 1	2156	81 49 35	2170	83 38 48	2183
	SATURN W.	45 23 22	2184	47 12 13	2193	49 0 51	2203	50 49 14	2214
	Antares W.	32 19 54	2137	34 9 56	2150	35 59 39	2164	37 49 1	2177
	Fomalhaut E.	53 46 10	2748	52 10 34	2793	50 35 57	2841	49 2 22	2893
	α Pegasi E.	73 18 10	2320	71 32 39	2337	69 47 33	2354	68 2 52	2373
16	Spica W.	92 39 33	2259	94 26 33	2275	96 13 9	2291	97 59 21	2309
	SATURN W.	59 46 42	2279	61 33 12	2294	63 19 20	2309	65 5 6	2325
	Antares W.	46 50 30	2253	48 37 39	2270	50 24 23	2286	52 10 43	2302
	Fomalhaut E.	41 33 11	2342	40 7 51	2335	38 44 20	2338	37 22 46	2353
	α Pegasi E.	59 26 42	2482	57 45 4	2508	56 4 2	2533	54 23 37	2564
	α Arietis E.	101 7 26	2269	99 20 41	2285	97 34 19	2301	95 48 21	2318
	VENUS E.	107 10 57	2532	105 30 28	2549	103 50 23	2567	102 10 43	2585
17	Spica W.	106 44 1	2397	108 27 40	2416	110 10 52	2434	111 53 38	2453
	SATURN W.	73 48 2	2409	75 31 24	2426	77 14 21	2445	78 56 52	2462
	Antares W.	60 56 7	2391	62 39 55	2409	64 23 17	2427	66 6 13	2446
	α Pegasi E.	46 11 56	2729	44 35 54	2769	43 0 45	2811	41 26 31	2855
	α Arietis E.	87 4 48	2406	85 21 22	2424	83 38 22	2443	81 55 48	2462
	VENUS E.	93 58 40	2681	92 21 34	2700	90 44 54	2720	89 8 41	2740

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
18	SATURN W.	80 38 58	2481	82 20 38	2499	84 1 53	2517	85 42 43	2535
	Antares W.	67 48 42	2465	69 30 45	2485	71 12 22	2502	72 53 33	2520
	♈ Arietis E.	80 13 41	2480	78 32 0	2499	76 50 45	2517	75 9 56	2536
	VENUS E.	87 32 54	2761	85 57 35	2781	84 22 42	2802	82 42 17	2822
	SUN E.	131 26 0	2793	129 51 23	2812	128 17 11	2832	126 43 25	2851
19	SATURN W.	94 0 31	2626	95 38 50	2645	97 16 44	2665	98 54 13	2681
	Antares W.	81 13 6	2611	82 51 46	2629	84 30 1	2647	86 7 52	2665
	♈ Arietis E.	66 52 20	2630	65 14 6	2648	63 36 16	2666	61 58 51	2684
	VENUS E.	75 2 51	2926	73 31 5	2946	71 59 45	2967	70 28 51	2988
	SUN E.	119 0 44	2948	117 29 26	2966	115 58 31	2985	114 28 0	3004
20	Antares W.	94 11 19	2749	95 46 54	2768	97 22 7	2781	98 57 0	2797
	♈ Aquilæ W.	47 40 28	4017	48 51 51	3971	50 3 59	3932	51 16 46	3897
	♈ Arietis E.	53 57 44	2772	52 22 40	2790	50 47 59	2807	49 13 40	2824
	VENUS E.	63 0 39	3087	61 32 14	3107	60 4 13	3126	58 36 35	3146
	SUN E.	107 1 7	3095	105 32 51	3112	104 4 55	3129	102 37 20	3144
21	Antares W.	106 46 30	2868	108 19 30	2882	109 52 12	2894	111 24 38	2908
	♈ Aquilæ W.	57 28 18	3776	58 43 45	3760	59 59 29	3746	61 15 28	3733
	♈ Arietis E.	41 27 25	2905	39 55 12	2920	38 23 18	2935	36 51 44	2950
	VENUS E.	51 24 8	3239	49 58 45	3257	48 33 43	3273	47 9 2	3294
	SUN E.	95 24 12	3222	93 58 29	3236	92 33 3	3250	91 7 53	3264
22	♈ Aquilæ W.	67 38 7	3693	68 55 2	3688	70 12 2	3683	71 29 7	3680
	Fomalhaut W.	42 38 26	3843	43 52 44	3806	45 7 40	3778	46 23 11	3743
	VENUS E.	40 10 55	3384	38 48 20	3402	37 26 6	3422	36 4 14	3441
	SUN E.	84 5 50	3324	82 42 6	3335	81 18 35	3345	79 55 16	3355
23	♈ Aquilæ W.	77 55 9	3673	79 12 25	3673	80 29 41	3673	81 46 57	3674
	Fomalhaut W.	52 47 38	3693	54 5 37	3677	55 23 53	3662	56 42 25	3650
	♈ Pegasi W.	30 10 26	3737	31 26 34	3687	32 43 35	3642	34 1 24	3603
	SUN E.	73 1 16	3397	71 38 56	3403	70 16 43	3420	68 54 38	3415
24	♈ Aquilæ W.	88 12 57	3682	89 30 3	3684	90 47 7	3688	92 4 7	3692
	Fomalhaut W.	63 18 20	3536	64 38 4	3528	65 57 57	3520	67 17 59	3513
	♈ Pegasi W.	40 39 37	3466	42 0 39	3446	43 22 3	3430	44 43 46	3413
	SUN E.	62 5 41	3438	60 44 8	3442	59 22 39	3445	58 1 13	3446
25	♈ Aquilæ W.	98 28 12	3711	99 44 47	3717	101 1 16	3723	102 17 39	3729
	Fomalhaut W.	74 0 5	3480	75 20 51	3475	76 41 43	3470	78 2 41	3464
	♈ Pegasi W.	51 36 31	3349	52 59 46	3336	54 23 13	3329	55 46 51	3319
	SUN E.	51 14 33	3453	49 53 16	3453	48 31 59	3453	47 10 42	3451
26	Fomalhaut W.	84 48 54	3441	86 10 24	3437	87 31 59	3433	88 53 38	3430
	♈ Pegasi W.	62 47 42	3276	64 12 22	3268	65 37 11	3260	67 2 9	3252
	SUN E.	40 23 53	3443	39 2 25	3439	37 40 53	3438	36 19 19	3434
27	Fomalhaut W.	95 42 53	3413	97 4 55	3411	98 26 59	3408	99 49 6	3408
	♈ Pegasi W.	74 9 17	3214	75 35 9	3207	77 1 10	3200	78 27 19	3193
	♈ Arietis W.	30 49 43	3093	32 18 1	3084	33 46 30	3075	35 15 10	3066
	SUN E.	29 30 31	3416	28 8 33	3413	26 46 31	3408	25 24 24	3405

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
18	SATURN W.	87 23 7	2553	89 3 6	2572	90 42 39	2591	92 21 47	2608
	Antares W.	74 34 19	2538	76 14 39	2557	77 54 33	2575	79 34 2	2593
	α Arietis E.	73 29 33	2555	71 49 36	2574	70 10 5	2593	68 31 0	2611
	VENUS E.	81 14 18	2643	79 40 46	2664	78 7 41	2685	76 35 3	2705
	SUN E.	125 10 3	2870	123 37 6	2890	122 4 34	2909	120 32 27	2928
19	SATURN W.	100 31 19	2698	102 8 1	2716	103 44 20	2735	105 20 16	2751
	Antares W.	87 45 19	2682	89 22 23	2699	90 59 4	2716	92 35 23	2733
	α Arietis E.	60 21 50	2702	58 45 13	2720	57 9 0	2738	55 33 11	2755
	VENUS E.	68 58 23	3008	67 28 20	3025	65 58 42	3047	64 29 28	3068
	SUN E.	112 57 54	3022	111 28 7	3041	109 58 45	3059	108 29 45	3077
20	Antares W.	100 31 32	2811	102 5 45	2827	103 39 38	2841	105 13 13	2855
	α Aquilæ W.	52 30 9	2866	53 44 3	2840	54 58 24	2816	56 13 10	2794
	α Arietis E.	47 39 43	2841	46 6 8	2856	44 32 53	2873	42 59 59	2888
	VENUS E.	57 9 21	3164	55 42 29	3183	54 16 0	3202	52 49 53	3220
	SUN E.	101 10 4	3161	99 43 8	3177	98 16 31	3193	96 50 13	3207
21	Antares W.	112 56 47	2920	114 28 41	2931	116 0 21	2942	117 31 47	2953
	α Aquilæ W.	62 31 40	3223	63 48 3	3213	65 4 36	3205	66 21 18	3198
	α Arietis E.	35 20 29	2966	33 49 34	2981	32 18 58	2997	30 48 42	3014
	VENUS E.	45 44 43	3311	44 20 44	3330	42 57 7	3348	41 33 51	3365
	SUN E.	89 42 59	3276	88 18 20	3289	86 53 56	3301	85 29 46	3313
22	α Aquilæ W.	72 46 15	3677	74 3 26	3676	75 20 39	3674	76 37 54	3674
	Fomalhaut W.	47 39 13	3716	48 55 43	3692	50 12 39	3670	51 29 58	3650
	VENUS E.	34 42 44	3462	33 21 37	3482	32 0 53	3505	30 40 34	3528
	SUN E.	78 32 8	3265	77 9 11	3272	75 46 23	3281	74 23 45	3289
23	α Aquilæ W.	83 4 12	3675	84 21 26	3677	85 38 38	3678	86 55 48	3679
	Fomalhaut W.	58 1 11	3576	59 20 11	3565	60 39 23	3555	61 58 46	3545
	α Pegasi W.	35 19 55	3568	36 39 4	3538	37 58 46	3511	39 18 58	3487
	SUN E.	67 32 39	3422	66 10 47	3426	64 49 0	3431	63 27 18	3435
24	α Aquilæ W.	93 21 4	3694	94 37 57	3697	95 54 47	3702	97 11 32	3707
	Fomalhaut W.	68 38 9	3506	69 58 27	3498	71 18 53	3492	72 39 26	3487
	α Pegasi W.	46 5 48	3399	47 28 6	3385	48 50 40	3372	50 13 29	3360
	SUN E.	56 39 49	3449	55 18 28	3450	53 57 8	3452	52 35 50	3453
25	α Aquilæ W.	103 33 55	3736	104 50 4	3744	106 6 5	3751	107 21 58	3760
	Fomalhaut W.	79 23 45	3460	80 44 54	3454	82 6 9	3450	83 27 29	3446
	α Pegasi W.	57 10 41	3310	58 34 41	3300	59 58 52	3293	61 23 12	3284
	SUN E.	45 49 23	3450	44 28 3	3449	43 6 42	3447	41 45 19	3445
26	Fomalhaut W.	90 15 21	3425	91 37 9	3423	92 59 0	3419	94 20 55	3416
	α Pegasi W.	68 27 17	3245	69 52 33	3236	71 17 59	3229	72 43 34	3222
	SUN E.	34 57 41	3431	33 35 59	3428	32 14 14	3424	30 52 25	3420
27	Fomalhaut W.	101 11 14	3406	102 33 24	3404	103 55 36	3403	105 17 49	3403
	α Pegasi W.	79 53 37	3186	81 20 3	3178	82 46 38	3172	84 13 21	3164
	α Arietis W.	36 44 1	3058	38 13 2	3049	39 42 14	3041	41 11 36	3033
	SUN E.	24 2 13	3401	22 39 58	3398	21 17 39	3395	19 55 17	3393

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sideral Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
Thur.	1	^h 6 ^m 42 ^s 50.22	10.340	N. 23 5 18.8	-10.59	15 46.14	68.76	^m 3 ^s 38.00	0.482
Frid.	2	6 46 58.25	10.328	23 0 52.6	11.59	15 46.14	68.72	3 49.43	0.470
Sat.	3	6 51 5.98	10.315	22 56 2.4	12.59	15 46.14	68.68	4 0.58	0.458
SUN.	4	6 55 13.39	10.302	22 50 48.1	-13.59	15 46.15	68.64	4 11.40	0.444
Mon.	5	6 59 20.46	10.288	22 45 10.1	14.58	15 46.17	68.59	4 21.88	0.429
Tues.	6	7 3 27.16	10.272	22 39 8.3	15.56	15 46.19	68.54	4 32.00	0.413
Wed.	7	7 7 33.48	10.255	22 32 43.0	-16.54	15 46.21	68.49	4 41.73	0.397
Thur.	8	7 11 39.40	10.238	22 25 54.4	17.51	15 46.24	68.44	4 51.06	0.380
Frid.	9	7 15 44.89	10.220	22 18 42.6	18.47	15 46.28	68.38	4 59.97	0.362
Sat.	10	7 19 49.95	10.202	22 11 7.8	-19.42	15 46.31	68.32	5 8.45	0.344
SUN.	11	7 23 54.56	10.183	22 3 10.2	20.37	15 46.35	68.26	5 16.48	0.325
Mon.	12	7 27 58.71	10.163	21 54 49.9	21.31	15 46.40	68.20	5 24.05	0.306
Tues.	13	7 32 2.38	10.143	21 46 7.1	-22.25	15 46.45	68.13	5 31.15	0.286
Wed.	14	7 36 5.57	10.123	21 37 2.0	23.18	15 46.50	68.06	5 37.76	0.266
Thur.	15	7 40 8.27	10.102	21 27 34.8	24.09	15 46.55	67.99	5 43.88	0.245
Frid.	16	7 44 10.46	10.081	21 17 45.8	-25.00	15 46.61	67.92	5 49.50	0.224
Sat.	17	7 48 12.15	10.059	21 7 35.0	25.90	15 46.67	67.85	5 54.62	0.202
SUN.	18	7 52 13.31	10.037	20 57 2.7	26.79	15 46.73	67.77	5 59.21	0.180
Mon.	19	7 56 13.95	10.015	20 46 9.1	-27.67	15 46.80	67.69	6 3.28	0.158
Tues.	20	8 0 14.05	9.993	20 34 54.5	28.54	15 46.87	67.61	6 6.81	0.136
Wed.	21	8 4 13.61	9.970	20 23 19.0	29.41	15 46.94	67.53	6 9.81	0.113
Thur.	22	8 8 12.62	9.947	20 11 22.9	-30.26	15 47.02	67.45	6 12.26	0.090
Frid.	23	8 12 11.07	9.924	19 59 6.5	31.10	15 47.10	67.37	6 14.14	0.067
Sat.	24	8 16 8.96	9.900	19 46 29.9	31.93	15 47.19	67.29	6 15.47	0.043
SUN.	25	8 20 6.27	9.876	19 33 33.6	-32.76	15 47.28	67.20	6 16.22	0.019
Mon.	26	8 24 3.01	9.852	19 20 17.6	33.57	15 47.38	67.12	6 16.40	0.005
Tues.	27	8 27 59.16	9.827	19 6 42.4	34.36	15 47.48	67.04	6 16.00	0.000
Wed.	28	8 31 54.71	9.802	18 52 48.2	-35.14	15 47.59	66.95	6 15.00	0.054
Thur.	29	8 35 49.66	9.777	18 38 35.4	35.92	15 47.71	66.86	6 13.40	0.079
Frid.	30	8 39 44.01	9.752	18 24 4.1	36.68	15 47.83	66.78	6 11.19	0.104
Sat.	31	8 43 37.75	9.726	18 9 14.7	37.43	15 47.95	66.69	6 8.38	0.130
SUN.	32	8 47 30.86	9.700	N. 17 54 7.6	-38.16	15 48.08	66.61	6 4.95	0.156

NOTE.—The mean time of semidiameter passing may be found by subtracting 0.19 from the sideral time.

The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
Thur.	1	^h 6 ^m 42 ^s 49.60	10.339	N. 23 5 19.5	-10.58	^m 3 37.97	0.482	^h 6 39 11.63
Frid.	2	6 46 57.59	10.327	23 0 53.4	11.59	3 49.40	0.470	6 43 8.19
Sat.	3	6 51 5.29	10.314	22 56 3.2	12.59	4 0.55	0.458	6 47 4.74
SUN.	4	6 55 12.67	10.300	22 50 49.1	-13.59	4 11.37	0.444	6 51 1.30
Mon.	5	6 59 19.71	10.286	22 45 11.1	14.58	4 21.85	0.429	6 54 57.86
Tues.	6	7 3 26.39	10.270	22 39 9.5	15.56	4 31.97	0.413	6 58 54.42
Wed.	7	7 7 32.68	10.254	22 32 44.3	-16.53	4 41.70	0.397	7 2 50.98
Thur.	8	7 11 38.57	10.237	22 25 55.8	17.50	4 51.03	0.380	7 6 47.54
Frid.	9	7 15 44.04	10.219	22 18 44.2	18.47	4 59.94	0.362	7 10 44.10
Sat.	10	7 19 49.08	10.201	22 11 9.5	-19.43	5 8.42	0.344	7 14 40.65
SUN.	11	7 23 53.67	10.182	22 3 12.0	20.37	5 16.46	0.325	7 18 37.21
Mon.	12	7 27 57.79	10.162	21 54 51.8	21.31	5 24.02	0.306	7 22 33.77
Tues.	13	7 32 1.45	10.142	21 46 9.1	-22.24	5 31.12	0.286	7 26 30.33
Wed.	14	7 36 4.62	10.122	21 37 4.1	23.16	5 37.74	0.266	7 30 26.88
Thur.	15	7 40 7.30	10.101	21 27 37.1	24.08	5 43.86	0.245	7 34 23.44
Frid.	16	7 44 9.48	10.080	21 17 48.2	-24.99	5 49.48	0.224	7 38 20.00
Sat.	17	7 48 11.16	10.059	21 7 37.5	25.89	5 54.60	0.202	7 42 16.56
SUN.	18	7 52 12.31	10.037	20 57 5.3	26.78	5 59.19	0.180	7 46 13.12
Mon.	19	7 56 12.93	10.015	20 46 11.9	-27.67	6 3.26	0.158	7 50 9.67
Tues.	20	8 0 13.03	9.993	20 34 57.3	28.54	6 6.80	0.136	7 54 6.23
Wed.	21	8 4 12.58	9.970	20 23 22.0	29.40	6 9.79	0.114	7 58 2.79
Thur.	22	8 8 11.59	9.947	20 11 26.0	-30.25	6 12.25	0.091	8 1 59.34
Frid.	23	8 12 10.04	9.924	19 59 9.7	31.10	6 14.14	0.067	8 5 55.90
Sat.	24	8 16 7.92	9.900	19 46 33.2	31.93	6 15.46	0.044	8 9 52.46
SUN.	25	8 20 5.24	9.876	19 33 37.0	-32.75	6 16.22	0.020	8 13 49.02
Mon.	26	8 24 1.98	9.852	19 20 21.1	33.56	6 16.40	0.004	8 17 45.57
Tues.	27	8 27 58.13	9.827	19 6 46.0	34.36	6 16.00	0.029	8 21 42.13
Wed.	28	8 31 53.69	9.802	18 52 51.8	-35.15	6 15.00	0.054	8 25 38.69
Thur.	29	8 35 48.65	9.777	18 38 39.0	35.92	6 13.40	0.079	8 29 35.24
Frid.	30	8 39 43.00	9.752	18 24 7.8	36.68	6 11.20	0.104	8 33 31.80
Sat.	31	8 43 36.75	9.727	18 9 18.4	37.43	6 8.40	0.130	8 37 28.36
SUN.	32	8 47 29.88	9.701	N. 17 54 11.4	-38.16	6 4.96	0.156	8 41 24.91

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
 The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing.

Diff. for 1 Hour,
 + 9^s.8565.
 (Table III.)

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ'					
1	182	99 50 44.5	50 5.5	143.05	— 0.15	0.0072213	+ 0.7	h m s 17 17 57.86
2	183	100 47 57.8	47 18.6	143.05	0.28	0.0072215	— 0.4	17 14 1.95
3	184	101 45 10.9	44 31.5	143.04	0.40	0.0072192	1.5	17 10 6.04
4	185	102 42 23.7	41 44.1	143.03	— 0.52	0.0072144	— 2.5	17 6 10.12
5	186	103 39 36.4	38 56.6	143.02	0.62	0.0072072	3.5	17 2 14.21
6	187	104 36 48.9	36 9.0	143.02	0.69	0.0071978	4.4	16 58 18.30
7	188	105 34 1.3	33 21.2	143.01	— 0.74	0.0071862	— 5.3	16 54 22.38
8	189	106 31 13.6	30 33.3	143.01	0.77	0.0071726	6.1	16 50 26.47
9	190	107 28 25.7	27 45.2	143.01	0.75	0.0071571	6.8	16 46 30.56
10	191	108 25 37.9	24 57.2	143.01	— 0.71	0.0071399	— 7.5	16 42 34.65
11	192	109 22 50.1	22 9.3	143.01	0.63	0.0071211	8.2	16 38 38.74
12	193	110 20 2.4	19 21.4	143.02	0.54	0.0071006	8.8	16 34 42.82
13	194	111 17 14.9	16 33.7	143.03	— 0.43	0.0070788	— 9.4	16 30 46.91
14	195	112 14 27.7	13 46.3	143.04	0.30	0.0070555	10.0	16 26 51.00
15	196	113 11 40.8	10 59.3	143.06	0.17	0.0070308	10.6	16 22 55.09
16	197	114 8 54.4	8 12.7	143.08	— 0.03	0.0070047	— 11.2	16 18 59.18
17	198	115 6 8.6	5 26.7	143.10	+ 0.09	0.0069771	11.8	16 15 3.27
18	199	116 3 23.5	2 41.4	143.13	0.21	0.0069480	12.4	16 11 7.35
19	200	116 60 38.9	59 56.7	143.16	+ 0.31	0.0069175	— 13.1	16 7 11.44
20	201	117 57 55.2	57 12.8	143.19	0.38	0.0068852	13.8	16 3 15.53
21	202	118 55 12.4	54 29.8	143.23	0.42	0.0068512	14.6	15 59 19.62
22	203	119 52 30.4	51 47.6	143.27	+ 0.44	0.0068153	— 15.4	15 55 23.71
23	204	120 49 49.3	49 6.4	143.31	0.42	0.0067773	16.3	15 51 27.80
24	205	121 47 9.1	46 26.0	143.34	0.36	0.0067373	17.2	15 47 31.88
25	206	122 44 29.8	43 46.6	143.38	+ 0.29	0.0066949	— 18.1	15 43 35.97
26	207	123 41 51.5	41 8.1	143.42	0.20	0.0066503	19.1	15 39 40.06
27	208	124 39 14.2	38 30.6	143.46	+ 0.08	0.0066031	20.1	15 35 44.15
28	209	125 36 37.6	35 53.9	143.49	— 0.05	0.0065536	— 21.2	15 31 48.24
29	210	126 34 2.0	33 18.1	143.53	0.18	0.0065015	22.2	15 27 52.33
30	211	127 31 27.2	30 43.2	143.56	0.30	0.0064471	23.2	15 23 56.42
31	212	128 28 53.2	28 9.0	143.60	0.42	0.0063901	24.2	15 20 0.51
32	213	129 26 19.9	25 35.5	143.63	— 0.52	0.0063308	— 25.2	15 16 4.60
NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ' to the mean equinox of January 0 th .								Diff. for 1 Hour, —9 ^h .8296. (Table II.)

GREENWICH MEAN TIME.									
Day of the Month.	THE MOON'S								
	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	' "	' "	' "	"	' "	"	h m	m	d
1	15 10.6	15 14.5	55 35.4	+1.15	55 49.4	+1.19	1 14.3	2.07	1.4
2	15 18.4	15 22.5	56 4.0	1.23	56 19.0	1.27	2 3.1	1.99	2.4
3	15 26.7	15 31.1	56 34.5	1.31	56 50.5	1.35	2 50.0	1.92	3.4
4	15 35.5	15 40.1	57 6.8	+1.37	57 23.4	+1.40	3 35.7	1.89	4.4
5	15 44.7	15 49.3	57 40.3	1.42	57 57.4	1.43	4 21.0	1.90	5.4
6	15 54.0	15 58.6	58 14.5	1.43	58 31.6	1.41	5 7.2	1.96	6.4
7	16 3.2	16 7.6	58 48.4	+1.38	59 4.6	+1.32	5 55.5	2.08	7.4
8	16 11.8	16 15.7	59 20.0	1.24	59 34.3	1.13	6 47.3	2.25	8.4
9	16 19.1	16 22.1	59 47.0	0.98	59 57.9	0.81	7 43.5	2.44	9.4
10	16 24.5	16 26.1	60 6.5	+0.60	60 12.4	+0.37	8 44.3	2.61	10.4
11	16 26.9	16 26.8	60 15.4	+0.12	60 15.2	-0.15	9 48.2	2.70	11.4
12	16 25.9	16 23.9	60 11.7	-0.44	60 4.6	0.73	10 52.7	2.65	12.4
13	16 21.1	16 17.4	59 54.2	-1.00	59 40.6	-1.26	11 54.7	2.50	13.4
14	16 12.9	16 7.7	59 24.0	1.49	59 4.8	1.69	12 52.1	2.29	14.4
15	16 1.9	15 55.6	58 43.5	1.85	58 20.4	1.97	13 44.6	2.09	15.4
16	15 49.0	15 42.3	57 56.3	-2.04	57 31.5	-2.07	14 32.6	1.93	16.4
17	15 35.5	15 28.8	57 6.6	2.05	56 42.2	2.00	15 17.4	1.82	17.4
18	15 22.4	15 16.3	56 18.6	1.91	55 56.3	1.80	16 0.2	1.76	18.4
19	15 10.7	15 5.5	55 35.5	-1.65	55 16.6	-1.48	16 42.3	1.75	19.4
20	15 1.0	14 57.1	54 59.9	1.30	54 45.5	1.10	17 24.7	1.79	20.4
21	14 53.8	14 51.2	54 33.5	0.90	54 24.0	0.68	18 8.4	1.86	21.4
22	14 49.3	14 48.2	54 17.1	-0.47	54 12.8	-0.25	18 54.1	1.95	22.4
23	14 47.7	14 47.9	54 11.0	-0.05	54 11.7	+0.15	19 42.2	2.05	23.4
24	14 48.7	14 50.1	54 14.7	+0.34	54 19.9	0.53	20 32.4	2.13	24.4
25	14 52.1	14 54.6	54 27.3	+0.69	54 36.5	+0.84	21 24.3	2.18	25.4
26	14 57.6	15 0.9	54 47.4	0.97	54 59.7	1.08	22 16.6	2.17	26.4
27	15 4.6	15 8.6	55 13.3	1.18	55 28.0	1.25	23 8.2	2.12	27.4
28	15 12.8	15 17.2	55 43.4	+1.30	55 59.3	+1.34	23 58.3	2.05	28.4
29	15 21.6	15 26.0	56 15.5	1.35	56 31.8	1.35	0		29.4
30	15 30.4	15 34.7	56 47.9	1.33	57 3.7	1.30	0 46.6	1.98	0.8
31	15 38.9	15 42.9	57 19.1	1.26	57 33.9	1.20	1 33.4	1.93	1.8
32	15 46.7	15 50.4	57 48.0	+1.14	58 1.4	+1.08	2 19.4	1.92	2.8

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 1.					SATURDAY 3.				
0	h m s	s	N. 21 58 34.2	8.559	0	h m s	s	N. 13 13 25.2	12.974
1	7 53 13.23	2.1711	21 49 57.3	8.671	1	9 33 51.77	2.0322	13 0 24.7	13.042
2	7 55 23.23	2.1652	21 41 13.7	8.782	2	9 35 53.64	2.0301	12 47 20.1	13.120
3	7 57 33.05	2.1622	21 32 23.4	8.893	3	9 37 55.38	2.0279	12 34 11.5	13.177
4	7 59 42.69	2.1591	21 23 26.5	9.003	4	9 39 56.99	2.0259	12 20 58.9	13.243
5	8 1 52.14	2.1560	21 14 23.0	9.113	5	9 41 58.49	2.0240	12 7 42.3	13.309
6	8 4 1.41	2.1530	21 5 12.9	9.222	6	9 43 59.87	2.0220	11 54 21.8	13.373
7	8 6 10.50	2.1499	20 55 56.4	9.329	7	9 46 1.13	2.0202	11 40 57.5	13.436
8	8 8 19.40	2.1468	20 46 33.4	9.436	8	9 48 2.29	2.0184	11 27 29.5	13.498
9	8 10 28.12	2.1438	20 37 4.0	9.542	9	9 50 3.34	2.0166	11 13 57.8	13.559
10	8 12 36.66	2.1407	20 27 28.3	9.647	10	9 52 4.28	2.0148	11 0 22.4	13.619
11	8 14 45.01	2.1377	20 17 46.4	9.751	11	9 54 5.12	2.0132	10 46 43.5	13.678
12	8 16 53.18	2.1346	20 7 58.2	9.855	12	9 56 5.87	2.0117	10 33 1.1	13.736
13	8 19 1.16	2.1315	19 58 3.8	9.957	13	9 58 6.52	2.0101	10 19 15.2	13.793
14	8 21 8.96	2.1284	19 48 3.3	10.059	14	10 0 7.08	2.0086	10 5 25.9	13.849
15	8 23 16.57	2.1253	19 37 56.7	10.160	15	10 2 7.55	2.0072	9 51 33.3	13.904
16	8 25 23.99	2.1222	19 27 44.1	10.260	16	10 4 7.94	2.0058	9 37 37.4	13.958
17	8 27 31.23	2.1192	19 17 25.5	10.359	17	10 6 8.25	2.0045	9 23 38.3	14.011
18	8 29 38.29	2.1161	19 7 1.0	10.457	18	10 8 8.48	2.0032	9 9 36.1	14.063
19	8 31 45.16	2.1130	18 56 30.7	10.554	19	10 10 8.64	2.0021	8 55 30.8	14.114
20	8 33 51.85	2.1100	18 45 54.5	10.652	20	10 12 8.73	2.0010	8 41 22.4	14.164
21	8 35 58.36	2.1070	18 35 12.5	10.748	21	10 14 8.76	2.0000	8 27 11.1	14.213
22	8 38 4.69	2.1040	18 24 24.8	10.842	22	10 16 8.73	1.9990	8 12 56.9	14.261
23	8 40 10.84	2.1009	N. 18 13 31.5	10.935	23	10 18 8.64	1.9980	N. 7 58 39.8	14.308
FRIDAY 2.					SUNDAY 4.				
0	8 42 16.80	2.0979	N. 18 2 32.6	11.027	0	10 20 8.49	1.9972	N. 7 44 20.0	14.353
1	8 44 22.59	2.0950	17 51 28.2	11.120	1	10 22 8.30	1.9964	7 29 57.5	14.398
2	8 46 28.20	2.0920	17 40 18.2	11.212	2	10 24 8.06	1.9957	7 15 32.3	14.443
3	8 48 33.63	2.0891	17 29 2.8	11.301	3	10 26 7.78	1.9951	7 1 4.4	14.486
4	8 50 38.89	2.0862	17 17 42.1	11.390	4	10 28 7.47	1.9945	6 46 34.0	14.527
5	8 52 43.97	2.0833	17 6 16.0	11.478	5	10 30 7.12	1.9939	6 32 1.1	14.567
6	8 54 48.88	2.0804	16 54 44.7	11.566	6	10 32 6.74	1.9935	6 17 25.9	14.607
7	8 56 53.62	2.0776	16 43 8.1	11.652	7	10 34 6.34	1.9932	6 2 48.3	14.646
8	8 58 58.19	2.0748	16 31 26.4	11.737	8	10 36 5.92	1.9928	5 48 8.4	14.683
9	9 1 2.59	2.0720	16 19 39.6	11.822	9	10 38 5.48	1.9926	5 33 26.3	14.720
10	9 3 6.83	2.0692	16 7 47.8	11.905	10	10 40 5.03	1.9924	5 18 42.0	14.756
11	9 5 10.90	2.0664	15 55 51.0	11.988	11	10 42 4.57	1.9923	5 3 55.6	14.790
12	9 7 14.80	2.0637	15 43 49.2	12.070	12	10 44 4.11	1.9923	4 49 7.2	14.823
13	9 9 18.54	2.0611	15 31 42.6	12.150	13	10 46 3.65	1.9924	4 34 16.8	14.856
14	9 11 22.13	2.0585	15 19 31.2	12.230	14	10 48 3.20	1.9926	4 19 24.5	14.887
15	9 13 25.56	2.0559	15 7 15.0	12.309	15	10 50 2.76	1.9928	4 4 30.4	14.917
16	9 15 28.84	2.0534	14 54 54.1	12.387	16	10 52 2.33	1.9931	3 49 34.5	14.946
17	9 17 31.97	2.0508	14 42 28.6	12.463	17	10 54 1.93	1.9935	3 34 36.9	14.974
18	9 19 34.94	2.0483	14 29 58.6	12.539	18	10 56 1.55	1.9939	3 19 37.6	15.002
19	9 21 37.77	2.0459	14 17 24.0	12.614	19	10 58 1.20	1.9944	3 4 36.7	15.028
20	9 23 40.45	2.0435	14 4 44.9	12.687	20	11 0 0.88	1.9950	2 49 34.3	15.052
21	9 25 42.99	2.0412	13 52 1.5	12.760	21	11 2 0.60	1.9957	2 34 30.5	15.075
22	9 27 45.39	2.0388	13 39 13.7	12.832	22	11 4 0.37	1.9965	2 19 25.3	15.098
23	9 29 47.65	2.0366	13 26 21.6	12.904	23	11 6 0.18	1.9973	2 4 18.7	15.120
24	9 31 49.78	2.0343	N. 13 13 25.2	12.974	24	11 8 0.04	1.9982	N. 1 49 10.9	15.140

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 5.					WEDNESDAY 7.				
0	11 8 0.04	1.9982	N. 1 49 10.9	15.140	0	12 46 33.15	2.1408	S. 10 18 41.2	14.699
1	11 9 59.96	1.9992	1 34 1.9	15.160	1	12 48 41.75	2.1458	10 33 21.9	14.657
2	11 11 59.95	2.0003	1 18 51.7	15.178	2	12 50 50.65	2.1509	10 48 0.1	14.614
3	11 14 0.00	2.0014	1 3 40.5	15.195	3	12 52 59.86	2.1561	11 2 35.6	14.568
4	11 16 0.12	2.0027	0 48 28.3	15.211	4	12 55 9.39	2.1614	11 17 8.3	14.522
5	11 18 0.32	2.0040	0 33 15.2	15.226	5	12 57 19.23	2.1667	11 31 38.2	14.474
6	11 20 0.60	2.0053	0 18 1.2	15.240	6	12 59 29.39	2.1721	11 46 5.2	14.424
7	11 22 0.96	2.0068	N. 0 2 46.4	15.252	7	13 1 39.88	2.1777	12 0 29.1	14.372
8	11 24 1.42	2.0085	S. 0 12 29.1	15.263	8	13 3 50.71	2.1833	12 14 49.9	14.320
9	11 26 1.98	2.0102	0 27 45.2	15.273	9	13 6 1.88	2.1890	12 29 7.5	14.266
10	11 28 2.64	2.0119	0 43 1.9	15.282	10	13 8 13.39	2.1947	12 43 21.8	14.210
11	11 30 3.40	2.0136	0 58 19.1	15.291	11	13 10 25.25	2.2005	12 57 32.7	14.152
12	11 32 4.27	2.0155	1 13 36.8	15.298	12	13 12 37.45	2.2063	13 11 40.0	14.092
13	11 34 5.26	2.0175	1 28 54.8	15.303	13	13 14 50.01	2.2123	13 25 43.7	14.031
14	11 36 6.37	2.0196	1 44 13.1	15.308	14	13 17 2.93	2.2184	13 39 43.7	13.969
15	11 38 7.61	2.0218	1 59 31.7	15.311	15	13 19 16.22	2.2245	13 53 40.0	13.906
16	11 40 8.98	2.0240	2 14 50.4	15.313	16	13 21 29.87	2.2307	14 7 32.4	13.839
17	11 42 10.49	2.0263	2 30 9.2	15.314	17	13 23 43.90	2.2369	14 21 20.7	13.771
18	11 44 12.14	2.0287	2 45 28.1	15.314	18	13 25 58.30	2.2432	14 35 4.9	13.702
19	11 46 13.94	2.0312	3 0 46.9	15.312	19	13 28 13.08	2.2495	14 48 44.9	13.631
20	11 48 15.89	2.0337	3 16 5.5	15.308	20	13 30 28.24	2.2559	15 2 20.6	13.558
21	11 50 17.99	2.0364	3 31 23.9	15.304	21	13 32 43.79	2.2624	15 15 51.9	13.484
22	11 52 20.26	2.0392	3 46 42.0	15.299	22	13 34 59.73	2.2690	15 29 18.7	13.408
23	11 54 22.70	2.0421	S. 4 1 59.8	15.293	23	13 37 16.07	2.2756	S. 15 42 40.9	13.330
TUESDAY 6.					THURSDAY 8.				
0	11 56 25.31	2.0450	S. 4 17 17.2	15.286	0	13 39 32.80	2.2822	S. 15 55 58.3	13.250
1	11 58 28.10	2.0480	4 32 34.1	15.277	1	13 41 49.94	2.2890	16 9 10.9	13.169
2	12 0 31.07	2.0511	4 47 50.4	15.266	2	13 44 7.48	2.2957	16 22 18.6	13.087
3	12 2 34.23	2.0543	5 3 6.0	15.254	3	13 46 25.42	2.3024	16 35 21.3	13.002
4	12 4 37.59	2.0576	5 18 20.9	15.242	4	13 48 43.77	2.3093	16 48 18.8	12.915
5	12 6 41.14	2.0608	5 33 35.0	15.227	5	13 51 2.54	2.3162	17 1 11.1	12.827
6	12 8 44.89	2.0642	5 48 48.1	15.211	6	13 53 21.72	2.3232	17 13 58.1	12.737
7	12 10 48.85	2.0678	6 4 0.3	15.195	7	13 55 41.32	2.3302	17 26 39.6	12.645
8	12 12 53.03	2.0715	6 19 11.5	15.177	8	13 58 1.34	2.3373	17 39 15.5	12.551
9	12 14 57.43	2.0752	6 34 21.5	15.157	9	14 0 21.79	2.3444	17 51 45.7	12.455
10	12 17 2.05	2.0789	6 49 30.3	15.137	10	14 2 42.67	2.3515	18 4 10.1	12.358
11	12 19 6.90	2.0827	7 4 37.9	15.115	11	14 5 3.97	2.3586	18 16 28.6	12.259
12	12 21 11.98	2.0867	7 19 44.1	15.092	12	14 7 25.70	2.3658	18 28 41.2	12.158
13	12 23 17.30	2.0907	7 34 48.9	15.067	13	14 9 47.86	2.3730	18 40 47.6	12.055
14	12 25 22.87	2.0949	7 49 52.1	15.040	14	14 12 10.46	2.3802	18 52 47.8	11.951
15	12 27 28.69	2.0991	8 4 53.7	15.012	15	14 14 33.49	2.3875	19 4 41.7	11.844
16	12 29 34.76	2.1034	8 19 53.6	14.983	16	14 16 56.96	2.3947	19 16 29.1	11.736
17	12 31 41.10	2.1078	8 34 51.7	14.952	17	14 19 20.86	2.4020	19 28 10.0	11.626
18	12 33 47.70	2.1122	8 49 47.9	14.921	18	14 21 45.20	2.4093	19 39 44.2	11.513
19	12 35 54.57	2.1168	9 4 42.2	14.888	19	14 24 9.98	2.4166	19 51 11.6	11.399
20	12 38 1.72	2.1214	9 19 34.4	14.853	20	14 26 35.20	2.4240	20 2 32.1	11.283
21	12 40 9.14	2.1261	9 34 24.5	14.817	21	14 29 0.86	2.4313	20 13 45.6	11.166
22	12 42 16.85	2.1309	9 49 12.4	14.779	22	14 31 26.96	2.4387	20 24 52.0	11.047
23	12 44 24.85	2.1358	10 3 58.0	14.740	23	14 33 53.50	2.4460	20 35 51.2	10.925
24	12 46 33.15	2.1408	S. 10 18 41.2	14.699	24	14 36 20.48	2.4533	S. 20 46 43.0	10.802

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 9.					SUNDAY 11.				
0	14 36 20.48	2.4533	S. 20 46 43.0	10.802	0	16 41 37.05	2.7290	S. 26 30 12.6	2.933
1	14 38 47.90	2.4607	20 57 27.4	10.677	1	16 44 20.87	2.7316	26 33 2.8	2.739
2	14 41 15.76	2.4680	21 8 4.2	10.549	2	16 47 4.84	2.7340	26 35 41.3	2.544
3	14 43 44.06	2.4753	21 18 33.3	10.420	3	16 49 48.95	2.7362	26 38 8.1	2.348
4	14 46 12.80	2.4826	21 28 54.6	10.290	4	16 52 33.18	2.7382	26 40 23.1	2.151
5	14 48 41.98	2.4899	21 39 8.1	10.158	5	16 55 17.53	2.7401	26 42 26.3	1.954
6	14 51 11.59	2.4972	21 49 13.6	10.023	6	16 58 1.99	2.7417	26 44 17.6	1.757
7	14 53 41.64	2.5044	21 59 10.9	9.887	7	17 0 46.54	2.7432	26 45 57.1	1.559
8	14 56 12.12	2.5115	22 9 0.0	9.749	8	17 3 31.17	2.7445	26 47 24.7	1.361
9	14 58 43.02	2.5186	22 18 40.8	9.609	9	17 6 15.88	2.7457	26 48 40.4	1.162
10	15 1 14.35	2.5258	22 28 13.1	9.467	10	17 9 0.65	2.7465	26 49 44.2	0.964
11	15 3 46.12	2.5330	22 37 36.9	9.324	11	17 11 45.46	2.7471	26 50 36.1	0.765
12	15 6 18.31	2.5400	22 46 52.0	9.179	12	17 14 30.30	2.7475	26 51 16.0	0.565
13	15 8 50.92	2.5469	22 55 58.4	9.032	13	17 17 15.16	2.7478	26 51 43.9	0.366
14	15 11 23.94	2.5538	23 4 55.9	8.883	14	17 20 0.04	2.7480	26 51 59.9	- 0.167
15	15 13 57.38	2.5607	23 13 44.4	8.732	15	17 22 44.92	2.7478	26 52 3.9	+ 0.033
16	15 16 31.23	2.5676	23 22 23.8	8.580	16	17 25 29.78	2.7475	26 51 55.9	0.232
17	15 19 5.49	2.5743	23 30 54.0	8.427	17	17 28 14.62	2.7471	26 51 36.0	0.431
18	15 21 40.15	2.5810	23 39 15.0	8.272	18	17 30 59.43	2.7464	26 51 4.2	0.630
19	15 24 15.21	2.5876	23 47 26.6	8.114	19	17 33 44.19	2.7454	26 50 20.4	0.829
20	15 26 50.66	2.5941	23 55 28.7	7.954	20	17 36 28.88	2.7443	26 49 24.7	1.027
21	15 29 26.50	2.6005	24 3 21.1	7.793	21	17 39 13.50	2.7430	26 48 17.1	1.226
22	15 32 2.72	2.6068	24 11 3.9	7.632	22	17 41 58.04	2.7415	26 46 57.6	1.424
23	15 34 39.32	2.6131	S. 24 18 36.9	7.468	23	17 44 42.48	2.7397	S. 26 45 26.2	1.621
SATURDAY 10.					MONDAY 12.				
0	15 37 16.30	2.6193	S. 24 26 0.1	7.303	0	17 47 26.81	2.7379	S. 26 43 43.0	1.828
1	15 39 53.64	2.6253	24 33 13.3	7.136	1	17 50 11.03	2.7358	26 41 48.0	2.015
2	15 42 31.34	2.6313	24 40 16.4	6.967	2	17 52 55.11	2.7335	26 39 41.2	2.212
3	15 45 9.40	2.6372	24 47 9.4	6.797	3	17 55 39.05	2.7311	26 37 22.6	2.408
4	15 47 47.81	2.6430	24 53 52.1	6.626	4	17 58 22.84	2.7284	26 34 52.3	2.608
5	15 50 26.56	2.6486	25 0 24.5	6.453	5	18 1 6.46	2.7256	26 32 10.4	2.795
6	15 53 5.64	2.6541	25 6 46.4	6.278	6	18 3 49.91	2.7226	26 29 16.9	2.988
7	15 55 45.05	2.6595	25 12 57.8	6.103	7	18 6 33.17	2.7193	26 26 11.8	3.181
8	15 58 24.78	2.6648	25 18 58.7	5.926	8	18 9 16.23	2.7159	26 22 55.1	3.373
9	16 1 4.83	2.6700	25 24 48.9	5.747	9	18 11 59.08	2.7123	26 19 27.0	3.565
10	16 3 45.18	2.6749	25 30 28.4	5.567	10	18 14 41.71	2.7086	26 15 47.5	3.753
11	16 6 25.82	2.6797	25 35 57.0	5.386	11	18 17 24.11	2.7048	26 11 56.6	3.948
12	16 9 6.75	2.6845	25 41 14.7	5.203	12	18 20 6.28	2.7007	26 7 54.4	4.131
13	16 11 47.96	2.6891	25 46 21.4	5.020	13	18 22 48.19	2.6963	26 3 40.9	4.318
14	16 14 29.44	2.6936	25 51 17.1	4.836	14	18 25 29.84	2.6919	25 59 16.3	4.505
15	16 17 11.19	2.6979	25 56 1.7	4.650	15	18 28 11.22	2.6873	25 54 40.6	4.688
16	16 19 53.19	2.7020	26 0 35.1	4.463	16	18 30 52.32	2.6826	25 49 53.8	4.871
17	16 22 35.43	2.7058	26 4 57.3	4.275	17	18 33 33.13	2.6777	25 44 56.1	5.052
18	16 25 17.89	2.7096	26 9 8.1	4.086	18	18 36 13.65	2.6727	25 39 47.5	5.233
19	16 28 0.58	2.7133	26 13 7.6	3.896	19	18 38 53.86	2.6675	25 34 28.1	5.413
20	16 30 43.49	2.7168	26 16 55.6	3.705	20	18 41 33.75	2.6621	25 28 57.9	5.592
21	16 33 26.60	2.7201	26 20 32.2	3.514	21	18 44 13.31	2.6566	25 23 17.1	5.768
22	16 36 9.90	2.7232	26 23 57.3	3.322	22	18 46 52.54	2.6510	25 17 25.7	5.944
23	16 38 53.39	2.7262	26 27 10.8	3.128	23	18 49 31.43	2.6452	25 11 23.8	6.118
24	16 41 37.05	2.7290	S. 26 30 12.6	2.933	24	18 52 9.97	2.6393	S. 25 5 11.5	6.291

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 13.					THURSDAY 15.				
0	18 52 9.97	2.6993	S. 25 5 11.5	6.291	0	20 50 34.29	2.2811	S. 17 17 31.8	12.472
1	18 54 48.15	2.6933	24 58 48.9	6.462	1	20 52 50.93	2.2735	17 5 1.0	12.554
2	18 57 25.97	2.6872	24 52 16.1	6.631	2	20 55 7.11	2.2658	16 52 25.3	12.636
3	19 0 3.42	2.6810	24 45 33.2	6.799	3	20 57 22.83	2.2582	16 39 44.9	12.712
4	19 2 40.49	2.6747	24 38 40.2	6.966	4	20 59 38.10	2.2506	16 26 59.8	12.790
5	19 5 17.18	2.6682	24 31 37.3	7.130	5	21 1 52.93	2.2434	16 14 10.1	12.865
6	19 7 53.48	2.6617	24 24 24.6	7.293	6	21 4 7.31	2.2359	16 1 16.0	12.938
7	19 10 29.38	2.6550	24 17 2.1	7.455	7	21 6 21.24	2.2286	15 48 17.6	13.009
8	19 13 4.88	2.6482	24 9 30.0	7.614	8	21 8 34.74	2.2213	15 35 14.9	13.078
9	19 15 39.97	2.6414	24 1 48.4	7.772	9	21 10 47.80	2.2140	15 22 8.2	13.145
10	19 18 14.65	2.6344	23 53 57.3	7.929	10	21 13 0.42	2.2068	15 8 57.5	13.212
11	19 20 48.90	2.6273	23 45 56.9	8.085	11	21 15 12.62	2.1997	14 55 42.8	13.277
12	19 23 22.73	2.6202	23 37 47.3	8.236	12	21 17 24.39	2.1926	14 42 24.3	13.339
13	19 25 56.13	2.6131	23 29 28.6	8.387	13	21 19 35.73	2.1856	14 29 2.1	13.399
14	19 28 29.10	2.6058	23 21 0.9	8.537	14	21 21 46.66	2.1785	14 15 36.4	13.458
15	19 31 1.63	2.5985	23 12 24.2	8.684	15	21 23 57.17	2.1716	14 2 7.2	13.516
16	19 33 33.72	2.5911	23 3 38.8	8.829	16	21 26 7.26	2.1648	13 48 34.5	13.572
17	19 36 5.36	2.5836	22 54 44.7	8.973	17	21 28 16.95	2.1581	13 34 58.6	13.625
18	19 38 36.55	2.5761	22 45 42.0	9.115	18	21 30 26.23	2.1514	13 21 19.5	13.677
19	19 41 7.29	2.5685	22 36 30.9	9.255	19	21 32 35.11	2.1448	13 7 37.3	13.728
20	19 43 37.57	2.5608	22 27 11.4	9.393	20	21 34 43.60	2.1382	12 53 52.1	13.777
21	19 46 7.39	2.4931	22 17 43.7	9.529	21	21 36 51.69	2.1316	12 40 4.0	13.825
22	19 48 36.75	2.4854	22 8 7.9	9.663	22	21 38 59.39	2.1252	12 26 13.1	13.872
23	19 51 5.64	2.4777	S. 21 58 24.1	9.796	23	21 41 6.71	2.1188	S. 12 12 19.4	13.916
WEDNESDAY 14.					FRIDAY 16.				
0	19 53 34.07	2.4699	S. 21 48 32.4	9.926	0	21 43 13.65	2.1126	S. 11 58 23.2	13.958
1	19 56 2.03	2.4621	21 38 33.0	10.054	1	21 45 20.22	2.1063	11 44 24.5	13.999
2	19 58 29.52	2.4542	21 28 25.9	10.181	2	21 47 26.41	2.1001	11 30 23.3	14.039
3	20 0 56.53	2.4463	21 18 11.3	10.306	3	21 49 32.23	2.0940	11 16 19.8	14.077
4	20 3 23.07	2.4384	21 7 49.2	10.428	4	21 51 37.69	2.0881	11 2 14.0	14.114
5	20 5 49.14	2.4306	20 57 19.9	10.548	5	21 53 42.80	2.0822	10 48 6.1	14.149
6	20 8 14.74	2.4227	20 46 43.4	10.667	6	21 55 47.55	2.0763	10 33 56.1	14.183
7	20 10 39.86	2.4147	20 35 59.8	10.784	7	21 57 51.95	2.0705	10 19 44.1	14.216
8	20 13 4.50	2.4067	20 25 9.3	10.899	8	21 59 56.01	2.0648	10 5 30.2	14.247
9	20 15 28.67	2.3988	20 14 12.0	11.012	9	22 1 59.73	2.0592	9 51 14.5	14.276
10	20 17 52.36	2.3908	20 3 7.9	11.122	10	22 4 3.11	2.0537	9 36 57.1	14.304
11	20 20 15.57	2.3829	19 51 57.3	11.231	11	22 6 6.17	2.0482	9 22 38.0	14.331
12	20 22 38.31	2.3750	19 40 40.2	11.338	12	22 8 8.90	2.0428	9 8 17.4	14.356
13	20 25 0.57	2.3671	19 29 16.7	11.443	13	22 10 11.31	2.0375	8 53 55.3	14.380
14	20 27 22.36	2.3592	19 17 47.0	11.546	14	22 12 13.40	2.0323	8 39 31.8	14.402
15	20 29 43.67	2.3512	19 6 11.2	11.647	15	22 14 15.18	2.0272	8 25 7.0	14.423
16	20 32 4.51	2.3433	18 54 29.3	11.747	16	22 16 16.66	2.0221	8 10 41.0	14.443
17	20 34 24.87	2.3354	18 42 41.5	11.844	17	22 18 17.83	2.0170	7 56 13.8	14.462
18	20 36 44.76	2.3276	18 30 48.0	11.939	18	22 20 18.70	2.0121	7 41 45.5	14.480
19	20 39 4.18	2.3198	18 18 48.8	12.032	19	22 22 19.28	2.0073	7 27 16.2	14.496
20	20 41 23.13	2.3120	18 6 44.1	12.124	20	22 24 19.58	2.0026	7 12 46.0	14.510
21	20 43 41.62	2.3042	17 54 33.9	12.214	21	22 26 19.59	1.9978	6 58 15.0	14.523
22	20 45 59.64	2.2965	17 42 18.4	12.302	22	22 28 19.32	1.9932	6 43 43.2	14.536
23	20 48 17.20	2.2887	17 29 57.7	12.388	23	22 30 18.78	1.9888	6 29 10.7	14.547
24	20 50 34.29	2.2811	S. 17 17 31.8	12.472	24	22 32 17.98	1.9844	S. 6 14 37.5	14.557

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 17.					MONDAY 19.				
0	22 32 17.98	1.9844	S. 6 14 37.5	14.557	0	0 4 0.22	1.8671	N. 5 15 32.9	13.846
1	22 34 16.91	1.9801	6 0 3.8	14.566	1	0 5 52.23	1.8666	5 29 22.6	13.870
2	22 36 15.59	1.9758	5 45 29.6	14.573	2	0 7 44.21	1.8662	5 43 10.1	13.773
3	22 38 14.01	1.9716	5 30 55.0	14.579	3	0 9 36.17	1.8658	5 56 55.3	13.735
4	22 40 12.18	1.9675	5 16 20.1	14.584	4	0 11 28.10	1.8654	6 10 38.3	13.697
5	22 42 10.11	1.9636	5 1 44.9	14.589	5	0 13 20.02	1.8651	6 24 19.0	13.659
6	22 44 7.81	1.9597	4 47 9.4	14.593	6	0 15 11.92	1.8649	6 37 57.4	13.620
7	22 46 5.27	1.9558	4 32 33.7	14.595	7	0 17 3.81	1.8648	6 51 33.4	13.579
8	22 48 2.50	1.9520	4 17 58.0	14.595	8	0 18 55.70	1.8648	7 5 6.9	13.538
9	22 49 59.51	1.9483	4 3 22.3	14.594	9	0 20 47.59	1.8648	7 18 38.0	13.497
10	22 51 56.30	1.9447	3 48 46.7	14.593	10	0 22 39.48	1.8649	7 32 6.6	13.455
11	22 53 52.88	1.9412	3 34 11.2	14.591	11	0 24 31.38	1.8652	7 45 32.6	13.413
12	22 55 49.24	1.9377	3 19 35.8	14.587	12	0 26 23.50	1.8654	7 58 56.1	13.369
13	22 57 45.40	1.9344	3 5 0.7	14.582	13	0 28 15.23	1.8657	8 12 16.9	13.324
14	22 59 41.37	1.9312	2 50 25.9	14.577	14	0 30 7.18	1.8660	8 25 35.0	13.280
15	23 1 37.14	1.9279	2 35 51.5	14.570	15	0 31 59.15	1.8664	8 38 50.5	13.235
16	23 3 32.72	1.9248	2 21 17.5	14.562	16	0 33 51.15	1.8670	8 52 3.2	13.188
17	23 5 28.12	1.9218	2 6 44.0	14.554	17	0 35 43.19	1.8676	9 5 13.0	13.140
18	23 7 23.34	1.9188	1 52 11.0	14.544	18	0 37 35.26	1.8682	9 18 20.0	13.092
19	23 9 18.38	1.9160	1 37 38.7	14.533	19	0 39 27.37	1.8689	9 31 24.1	13.044
20	23 11 13.26	1.9132	1 23 7.0	14.522	20	0 41 19.53	1.8697	9 44 25.3	12.996
21	23 13 7.97	1.9105	1 8 36.0	14.510	21	0 43 11.73	1.8705	9 57 23.6	12.946
22	23 15 2.52	1.9078	0 54 5.8	14.497	22	0 45 3.99	1.8715	10 10 18.8	12.895
23	23 16 56.91	1.9052	S. 0 39 36.4	14.482	23	0 46 56.31	1.8724	N. 10 23 11.0	12.844
SUNDAY 18.					TUESDAY 20.				
0	23 18 51.15	1.9028	S. 0 25 8.0	14.466	0	0 48 48.68	1.8734	N. 10 36 0.1	12.792
1	23 20 45.25	1.9005	S. 0 10 40.5	14.450	1	0 50 41.12	1.8746	10 48 46.1	12.740
2	23 22 39.21	1.8982	N. 0 3 46.0	14.433	2	0 52 33.63	1.8757	11 1 28.9	12.687
3	23 24 33.03	1.8959	0 18 11.5	14.416	3	0 54 26.20	1.8769	11 14 8.5	12.633
4	23 26 26.72	1.8938	0 32 35.9	14.397	4	0 56 18.85	1.8782	11 26 44.9	12.579
5	23 28 20.29	1.8918	0 46 59.1	14.377	5	0 58 11.58	1.8796	11 39 18.0	12.524
6	23 30 13.73	1.8898	1 1 21.1	14.356	6	1 0 4.40	1.8810	11 51 47.8	12.468
7	23 32 7.06	1.8879	1 15 41.8	14.334	7	1 1 57.30	1.8824	12 4 14.2	12.412
8	23 34 0.28	1.8860	1 30 1.2	14.312	8	1 3 50.29	1.8840	12 16 37.2	12.355
9	23 35 53.38	1.8842	1 44 19.3	14.289	9	1 5 43.38	1.8856	12 28 56.8	12.297
10	23 37 46.38	1.8826	1 58 35.9	14.264	10	1 7 36.57	1.8872	12 41 12.9	12.238
11	23 39 39.29	1.8810	2 12 51.0	14.240	11	1 9 29.85	1.8888	12 53 25.4	12.179
12	23 41 32.10	1.8794	2 27 4.7	14.215	12	1 11 23.23	1.8906	13 5 34.4	12.120
13	23 43 24.82	1.8780	2 41 16.8	14.188	13	1 13 16.72	1.8925	13 17 39.8	12.059
14	23 45 17.46	1.8766	2 55 27.3	14.161	14	1 15 10.33	1.8944	13 29 41.5	11.998
15	23 47 10.02	1.8753	3 9 36.1	14.132	15	1 17 4.05	1.8963	13 41 39.6	11.937
16	23 49 2.50	1.8742	3 23 43.2	14.103	16	1 18 57.89	1.8983	13 53 34.0	11.875
17	23 50 54.92	1.8731	3 37 48.5	14.074	17	1 20 51.85	1.9003	14 5 24.6	11.812
18	23 52 47.27	1.8719	3 51 52.1	14.044	18	1 22 45.93	1.9024	14 17 11.4	11.748
19	23 54 39.55	1.8709	4 5 53.8	14.012	19	1 24 40.14	1.9046	14 28 54.4	11.684
20	23 56 31.78	1.8701	4 19 53.6	13.980	20	1 26 34.48	1.9068	14 40 33.5	11.619
21	23 58 23.96	1.8693	4 33 51.4	13.947	21	1 28 28.96	1.9091	14 52 8.7	11.553
22	0 0 16.09	1.8685	4 47 47.3	13.914	22	1 30 23.57	1.9113	15 3 39.9	11.487
23	0 2 8.18	1.8677	5 1 41.1	13.880	23	1 32 18.32	1.9137	15 15 7.1	11.420
24	0 4 0.22	1.8671	N. 5 15 32.9	13.846	24	1 34 13.22	1.9162	N. 15 26 30.3	11.352

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 21.					FRIDAY 23.				
0	1 34 13.22	1.9162	N.15 26 30.3	11.352	0	3 9 44.95	2.0753	N.23 0 37.7	7.302
1	1 36 8.26	1.9186	15 37 49.4	11.284	1	3 11 49.58	2.0791	23 7 52.8	7.201
2	1 38 3.45	1.9211	15 49 4.4	11.216	2	3 13 54.44	2.0829	23 15 1.8	7.098
3	1 39 58.80	1.9237	16 0 15.3	11.147	3	3 15 59.53	2.0868	23 22 4.6	6.995
4	1 41 54.30	1.9263	16 11 22.0	11.076	4	3 18 4.85	2.0906	23 29 1.2	6.891
5	1 43 49.06	1.9289	16 22 24.4	11.004	5	3 20 10.40	2.0943	23 35 51.5	6.787
6	1 45 45.77	1.9316	16 33 22.5	10.932	6	3 22 16.17	2.0981	23 42 35.6	6.682
7	1 47 41.75	1.9342	16 44 16.3	10.860	7	3 24 22.17	2.1019	23 49 13.4	6.576
8	1 49 37.90	1.9374	16 55 5.7	10.787	8	3 26 28.40	2.1057	23 55 44.8	6.469
9	1 51 34.22	1.9401	17 5 50.8	10.714	9	3 28 34.85	2.1094	24 2 9.7	6.362
10	1 53 30.71	1.9429	17 16 31.4	10.639	10	3 30 41.53	2.1132	24 8 28.2	6.254
11	1 55 27.37	1.9458	17 27 7.5	10.565	11	3 32 48.43	2.1169	24 14 40.2	6.146
12	1 57 24.21	1.9488	17 37 39.2	10.490	12	3 34 55.56	2.1207	24 20 45.7	6.037
13	1 59 21.23	1.9518	17 48 6.3	10.413	13	3 37 2.91	2.1243	24 26 44.6	5.927
14	2 1 18.43	1.9549	17 58 28.8	10.336	14	3 39 10.48	2.1280	24 32 36.9	5.817
15	2 3 15.82	1.9580	18 8 46.6	10.258	15	3 41 18.27	2.1317	24 38 22.6	5.706
16	2 5 13.39	1.9611	18 18 59.7	10.179	16	3 43 26.28	2.1353	24 44 1.6	5.593
17	2 7 11.15	1.9642	18 29 8.1	10.101	17	3 45 34.51	2.1390	24 49 33.8	5.480
18	2 9 9.10	1.9674	18 39 11.8	10.022	18	3 47 42.96	2.1426	24 54 59.2	5.367
19	2 11 7.24	1.9707	18 49 10.7	9.941	19	3 49 51.62	2.1462	25 0 17.8	5.253
20	2 13 5.58	1.9740	18 59 4.7	9.859	20	3 52 0.50	2.1497	25 5 29.5	5.138
21	2 15 4.12	1.9773	19 8 53.8	9.777	21	3 54 9.59	2.1532	25 10 34.4	5.024
22	2 17 2.85	1.9806	19 18 38.0	9.695	22	3 56 18.89	2.1567	25 15 32.4	4.908
23	2 19 1.79	1.9840	N.19 28 17.2	9.612	23	3 58 28.40	2.1602	N.25 20 23.3	4.790
THURSDAY 22.					SATURDAY 24.				
0	2 21 0.93	1.9873	N.19 37 51.4	9.528	0	4 0 38.11	2.1636	N.25 25 7.2	4.672
1	2 23 0.27	1.9907	19 47 20.6	9.443	1	4 2 48.03	2.1670	25 29 44.0	4.555
2	2 24 59.82	1.9942	19 56 44.6	9.358	2	4 4 58.15	2.1704	25 34 13.8	4.437
3	2 26 59.58	1.9977	20 6 3.5	9.272	3	4 7 8.48	2.1737	25 38 36.5	4.318
4	2 28 59.55	2.0012	20 15 17.2	9.185	4	4 9 19.00	2.1770	25 42 52.0	4.198
5	2 30 59.73	2.0048	20 24 25.7	9.097	5	4 11 29.72	2.1803	25 47 0.3	4.079
6	2 33 0.13	2.0084	20 33 28.9	9.009	6	4 13 40.64	2.1836	25 51 1.5	3.959
7	2 35 0.74	2.0120	20 42 26.8	8.920	7	4 15 51.75	2.1869	25 54 55.4	3.837
8	2 37 1.57	2.0156	20 51 19.3	8.831	8	4 18 3.05	2.1898	25 58 41.9	3.714
9	2 39 2.61	2.0192	21 0 6.5	8.741	9	4 20 14.53	2.1929	26 2 21.1	3.592
10	2 41 3.87	2.0228	21 8 48.2	8.649	10	4 22 26.20	2.1960	26 5 53.0	3.469
11	2 43 5.35	2.0265	21 17 24.4	8.558	11	4 24 38.05	2.1989	26 9 17.4	3.345
12	2 45 7.05	2.0302	21 25 55.2	8.466	12	4 26 50.07	2.2018	26 12 34.4	3.222
13	2 47 8.97	2.0338	21 34 20.4	8.372	13	4 29 2.27	2.2047	26 15 44.0	3.097
14	2 49 11.11	2.0376	21 42 39.9	8.278	14	4 31 14.64	2.2076	26 18 46.0	2.971
15	2 51 13.48	2.0413	21 50 53.8	8.184	15	4 33 27.19	2.2105	26 21 40.5	2.846
16	2 53 16.07	2.0451	21 59 2.0	8.089	16	4 35 39.90	2.2132	26 24 27.5	2.719
17	2 55 18.89	2.0488	22 7 4.5	7.993	17	4 37 52.77	2.2158	26 27 6.8	2.592
18	2 57 21.93	2.0526	22 15 1.2	7.897	18	4 40 5.80	2.2185	26 29 38.5	2.465
19	2 59 25.20	2.0564	22 22 52.1	7.799	19	4 42 18.99	2.2211	26 32 2.6	2.337
20	3 1 28.70	2.0602	22 30 37.1	7.701	20	4 44 32.33	2.2236	26 34 19.0	2.209
21	3 3 32.42	2.0639	22 38 16.2	7.602	21	4 46 45.82	2.2260	26 36 27.7	2.081
22	3 5 36.37	2.0677	22 45 49.4	7.503	22	4 48 59.45	2.2283	26 38 28.7	1.952
23	3 7 40.55	2.0715	22 53 16.6	7.403	23	4 51 13.22	2.2307	26 40 21.9	1.822
24	3 9 44.95	2.0753	N.23 0 37.7	7.302	24	4 53 27.14	2.2331	N.26 42 7.3	1.692

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 25.					TUESDAY 27.				
0	4 53 27.14	2.2331	N.26 42 7.3	1.692	0	6 41 54.45	2.2376	N.25 28 49.1	4.772
1	4 55 41.19	2.2338	26 43 44.9	1.562	1	6 44 9.87	2.2362	25 23 58.8	4.905
2	4 57 55.37	2.2373	26 45 14.7	1.431	2	6 46 25.20	2.2348	25 19 0.5	5.038
3	5 0 9.67	2.2394	26 46 36.6	1.300	3	6 48 40.45	2.2335	25 13 54.2	5.171
4	5 2 24.10	2.2413	26 47 50.7	1.168	4	6 50 55.62	2.2321	25 8 40.0	5.303
5	5 4 38.65	2.2434	26 48 56.8	1.036	5	6 53 10.70	2.2305	25 3 17.9	5.434
6	5 6 53.31	2.2453	26 49 55.0	0.904	6	6 55 25.68	2.2289	24 57 47.9	5.566
7	5 9 8.08	2.2471	26 50 45.3	0.771	7	6 57 40.57	2.2273	24 52 10.0	5.697
8	5 11 22.96	2.2488	26 51 27.6	0.638	8	6 59 55.36	2.2256	24 46 24.3	5.827
9	5 13 37.94	2.2505	26 52 1.9	0.505	9	7 2 10.04	2.2238	24 40 30.8	5.957
10	5 15 53.02	2.2521	26 52 28.2	0.372	10	7 4 24.62	2.2221	24 34 29.5	6.086
11	5 18 8.19	2.2536	26 52 46.5	0.238	11	7 6 39.09	2.2202	24 28 20.5	6.215
12	5 20 23.45	2.2550	26 52 56.8	+ 0.104	12	7 8 53.44	2.2183	24 22 3.7	6.344
13	5 22 38.79	2.2564	26 52 59.0	- 0.031	13	7 11 7.68	2.2163	24 15 39.2	6.472
14	5 24 54.22	2.2578	26 52 53.1	0.165	14	7 13 21.80	2.2143	24 9 7.1	6.599
15	5 27 9.73	2.2591	26 52 39.2	0.299	15	7 15 35.79	2.2122	24 2 27.3	6.726
16	5 29 25.31	2.2602	26 52 17.2	0.435	16	7 17 49.66	2.2101	23 55 39.9	6.853
17	5 31 40.95	2.2612	26 51 47.0	0.571	17	7 20 3.40	2.2079	23 48 44.9	6.979
18	5 33 56.65	2.2622	26 51 8.7	0.706	18	7 22 17.01	2.2057	23 41 42.4	7.104
19	5 36 12.41	2.2631	26 50 22.3	0.841	19	7 24 30.49	2.2035	23 34 32.4	7.229
20	5 38 28.22	2.2640	26 49 27.8	0.977	20	7 26 43.83	2.2012	23 27 14.9	7.354
21	5 40 44.09	2.2648	26 48 25.1	1.112	21	7 28 57.03	2.2188	23 19 49.9	7.477
22	5 43 0.00	2.2655	26 47 14.3	1.248	22	7 31 10.09	2.2165	23 12 17.6	7.600
23	5 45 15.95	2.2662	N.26 45 55.3	1.384	23	7 33 23.01	2.2142	N.23 4 37.9	7.722
MONDAY 26.					WEDNESDAY 28.				
0	5 47 31.94	2.2667	N.26 44 28.2	1.520	0	7 35 35.79	2.2118	N.22 56 50.9	7.844
1	5 49 47.96	2.2672	26 42 52.9	1.657	1	7 37 48.42	2.2095	22 48 56.6	7.965
2	5 52 4.00	2.2676	26 41 9.4	1.793	2	7 40 0.90	2.2067	22 40 55.1	8.085
3	5 54 20.07	2.2680	26 39 17.8	1.929	3	7 42 13.22	2.2041	22 32 46.4	8.205
4	5 56 36.16	2.2682	26 37 18.0	2.066	4	7 44 25.39	2.2015	22 24 30.5	8.324
5	5 58 52.25	2.2683	26 35 9.9	2.202	5	7 46 37.40	2.1989	22 16 7.5	8.443
6	6 1 8.35	2.2684	26 32 53.7	2.338	6	7 48 49.26	2.1963	22 7 37.4	8.561
7	6 3 24.46	2.2684	26 30 29.3	2.475	7	7 51 0.96	2.1937	21 59 0.2	8.677
8	6 5 40.56	2.2683	26 27 56.7	2.611	8	7 53 12.50	2.1910	21 50 16.1	8.792
9	6 7 56.66	2.2682	26 25 16.0	2.747	9	7 55 23.88	2.1882	21 41 25.1	8.907
10	6 10 12.75	2.2680	26 22 27.1	2.883	10	7 57 35.09	2.1855	21 32 27.2	9.022
11	6 12 28.82	2.2678	26 19 30.0	3.019	11	7 59 46.14	2.1828	21 23 22.4	9.137
12	6 14 44.88	2.2675	26 16 24.8	3.155	12	8 1 57.03	2.1801	21 14 10.8	9.250
13	6 17 0.92	2.2670	26 13 11.4	3.291	13	8 4 7.75	2.1773	21 4 52.4	9.362
14	6 19 16.92	2.2664	26 9 49.9	3.427	14	8 6 18.30	2.1745	20 55 27.3	9.473
15	6 21 32.89	2.2658	26 6 20.2	3.562	15	8 8 28.69	2.1717	20 45 55.6	9.583
16	6 23 48.82	2.2652	26 2 42.4	3.697	16	8 10 38.91	2.1689	20 36 17.3	9.693
17	6 26 4.71	2.2645	25 58 56.5	3.832	17	8 12 48.96	2.1660	20 26 32.4	9.802
18	6 28 20.56	2.2637	25 55 2.5	3.967	18	8 14 58.83	2.1631	20 16 41.0	9.910
19	6 30 36.36	2.2628	25 51 0.4	4.102	19	8 17 8.53	2.1603	20 6 43.2	10.017
20	6 32 52.10	2.2618	25 46 50.2	4.237	20	8 19 18.07	2.1575	19 56 38.9	10.124
21	6 35 7.78	2.2608	25 42 32.0	4.371	21	8 21 27.43	2.1546	19 46 28.3	10.229
22	6 37 23.40	2.2598	25 38 5.7	4.505	22	8 23 36.62	2.1517	19 36 11.4	10.334
23	6 39 38.96	2.2587	25 33 31.4	4.638	23	8 25 45.64	2.1489	19 25 48.2	10.438
24	6 41 54.45	2.2576	N.25 28 49.1	4.772	24	8 27 54.49	2.1461	N.19 15 18.8	10.541

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 29.					SATURDAY 31.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
1	8 27 54.49	2.1461	N. 19 15 18.8	20.541	1	10 7 56.69	2.0345	N. 9 9 34.6	14.295
2	8 30 3.17	2.1438	19 4 43.3	20.643	2	10 9 58.72	2.0338	8 55 15.3	14.347
3	8 32 11.67	2.1403	18 54 1.7	20.744	3	10 12 0.67	2.0319	8 40 52.9	14.397
4	8 34 20.00	2.1374	18 43 14.0	20.844	4	10 14 2.55	2.0307	8 26 27.6	14.446
5	8 36 28.16	2.1346	18 32 20.4	20.943	5	10 16 4.36	2.0296	8 11 59.4	14.495
6	8 38 36.15	2.1318	18 21 20.9	21.041	6	10 18 6.10	2.0285	7 57 28.2	14.543
7	8 40 43.98	2.1291	18 10 15.5	21.138	7	10 20 7.78	2.0274	7 42 54.2	14.590
8	8 42 51.64	2.1264	17 59 4.3	21.235	8	10 22 9.39	2.0264	7 28 17.5	14.633
9	8 44 59.12	2.1233	17 47 47.3	21.330	9	10 24 10.95	2.0256	7 13 38.2	14.677
10	8 47 6.43	2.1205	17 36 24.7	21.424	10	10 26 12.46	2.0248	6 58 56.3	14.719
11	8 49 13.58	2.1177	17 24 56.4	21.518	11	10 28 13.92	2.0240	6 44 11.9	14.761
12	8 51 20.56	2.1149	17 13 22.5	21.610	12	10 30 15.34	2.0232	6 29 25.0	14.801
13	8 53 27.37	2.1122	17 1 43.2	21.701	13	10 32 16.71	2.0225	6 14 35.8	14.839
14	8 55 34.02	2.1095	16 49 58.4	21.792	14	10 34 18.04	2.0219	5 59 44.3	14.877
15	8 57 40.51	2.1067	16 38 8.1	21.882	15	10 36 19.34	2.0215	5 44 50.5	14.914
16	8 59 46.83	2.1040	16 26 12.5	21.970	16	10 38 20.62	2.0211	5 29 54.6	14.949
17	9 1 52.99	2.1013	16 14 11.7	22.057	17	10 40 21.87	2.0207	5 14 56.6	14.983
18	9 3 58.99	2.0987	16 2 5.6	22.144	18	10 42 23.10	2.0203	4 59 56.6	15.017
19	9 6 4.84	2.0962	15 49 54.4	22.229	19	10 44 24.30	2.0199	4 44 54.6	15.048
20	9 8 10.53	2.0936	15 37 38.1	22.314	20	10 46 25.49	2.0196	4 29 50.8	15.078
21	9 10 16.07	2.0910	15 25 16.7	22.397	21	10 48 26.68	2.0197	4 14 45.2	15.108
22	9 12 21.45	2.0884	15 12 50.4	22.479	22	10 50 27.86	2.0197	3 59 37.8	15.137
23	9 14 26.68	2.0859	15 0 19.2	22.561	23	10 52 29.04	2.0197	3 44 28.8	15.164
24	9 16 31.76	2.0834	N. 14 47 43.1	22.641		10 54 30.22	2.0197	N. 3 29 18.2	15.190
FRIDAY 30.					SUNDAY, AUGUST 1.				
0	9 18 36.69	2.0810	N. 14 35 2.3	22.719	0	10 56 31.40	2.0196	N. 3 14 6.0	15.215
1	9 20 41.48	2.0786	14 22 16.8	22.797	PHASES OF THE MOON.				
2	9 22 46.12	2.0762	14 9 26.6	22.876					
3	9 24 50.62	2.0738	13 56 31.7	22.952					
4	9 26 54.98	2.0715	13 43 32.3	23.027					
5	9 28 59.20	2.0692	13 30 28.5	23.100					
6	9 31 3.29	2.0670	13 17 20.3	23.173					
7	9 33 7.24	2.0648	13 4 7.7	23.245					
8	9 35 11.06	2.0627	12 50 50.9	23.315					
9	9 37 14.76	2.0606	12 37 29.9	23.385					
10	9 39 18.33	2.0585	12 24 4.7	23.454					
11	9 41 21.78	2.0564	12 10 35.4	23.521					
12	9 43 25.10	2.0544	11 57 2.2	23.587					
13	9 45 28.31	2.0525	11 43 25.0	23.653					
14	9 47 31.40	2.0506	11 29 43.9	23.717					
15	9 49 34.38	2.0488	11 15 59.0	23.779					
16	9 51 37.25	2.0470	11 2 10.4	23.841					
17	9 53 40.02	2.0453	10 48 18.1	23.902					
18	9 55 42.69	2.0437	10 34 22.2	23.962					
19	9 57 45.26	2.0420	10 20 22.7	24.021					
20	9 59 47.73	2.0403	10 6 19.7	24.077					
21	10 1 50.10	2.0387	9 52 13.4	24.133					
22	10 3 52.38	2.0373	9 38 3.7	24.189					
23	10 5 54.58	2.0359	9 23 50.7	24.243					
24	10 7 56.69	2.0345	N. 9 9 34.6	24.295					

d h m

☾ First Quarter . . . July 7 1 32.0

○ Full Moon 13 16 52.3

☾ Last Quarter 21 3 8.2

● New Moon 29 3 57.8

d h

☾ Perigee July 11 5.2

☾ Apogee 23 2.7

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
1	SUN W.	15 47 4	3198	17 13 16	3183	18 39 45	3168	20 6 32	3155
	JUPITER E.	40 29 56	2887	38 57 21	2881	37 24 38	2874	35 51 46	2867
	Spica E.	86 51 24	2815	85 17 16	2808	83 42 58	2799	82 8 29	2792
2	SUN W.	27 24 22	3094	28 52 39	3082	30 21 10	3072	31 49 54	3062
	Spica E.	74 13 13	2747	72 37 36	2738	71 1 47	2730	69 25 47	2722
	SATURN E.	106 26 27	2764	104 51 12	2754	103 15 44	2745	101 40 4	2736
3	SUN W.	39 16 50	3009	40 46 52	2998	42 17 7	2988	43 47 35	2977
	Spica E.	61 22 53	2678	59 45 43	2669	58 8 21	2660	56 30 47	2651
	SATURN E.	93 38 42	2690	92 1 49	2681	90 24 44	2672	88 47 27	2663
4	SUN W.	51 23 11	2923	52 54 58	2915	54 26 58	2904	55 59 12	2894
	Spica E.	48 19 58	2607	46 41 12	2597	45 2 13	2589	43 23 3	2580
	SATURN E.	80 37 58	2618	78 59 28	2609	77 20 45	2600	75 41 50	2591
	Antares E.	94 4 53	2596	92 25 52	2585	90 46 37	2576	89 7 9	2566
5	SUN W.	63 43 45	2839	65 17 22	2829	66 51 12	2818	68 25 16	2807
	SATURN E.	67 24 9	2546	65 44 0	2538	64 3 39	2528	62 23 5	2520
	Antares E.	80 46 29	2517	79 5 40	2507	77 24 37	2498	75 43 21	2487
6	SUN W.	76 19 14	2732	77 54 45	2721	79 30 31	2710	81 6 31	2700
	Regulus W.	32 48 10	2450	34 30 34	2438	36 13 14	2427	37 56 10	2416
	MARS W.	32 36 25	2653	34 14 8	2640	35 52 8	2629	37 30 23	2617
	SATURN E.	53 57 22	2479	52 15 39	2472	50 33 46	2464	48 51 42	2457
	Antares E.	67 13 24	2437	65 30 42	2426	63 47 45	2417	62 4 34	2406
7	SUN W.	89 10 13	2663	90 47 42	2653	92 25 25	2642	94 3 23	2631
	Regulus W.	46 34 44	2362	48 19 13	2352	50 3 57	2342	51 48 56	2331
	MARS W.	45 45 40	2560	47 25 30	2548	49 5 36	2538	50 45 57	2526
	Antares E.	53 24 57	2355	51 40 17	2345	49 55 23	2335	48 10 14	2325
	α Aquilæ E.	105 59 36	3020	104 29 48	3000	102 59 35	2981	101 28 58	2962
8	SUN W.	102 16 50	2579	103 56 14	2569	105 35 52	2559	107 15 43	2549
	Regulus W.	60 37 33	2281	62 24 0	2272	64 10 41	2263	65 57 35	2253
	MARS W.	59 11 27	2474	60 53 17	2465	62 35 20	2455	64 17 37	2445
	JUPITER W.	51 54 26	2344	53 39 22	2333	55 24 33	2324	57 9 58	2315
	Antares E.	39 20 55	2277	37 34 21	2267	35 47 33	2258	34 0 32	2249
	α Aquilæ E.	93 50 41	2891	92 18 10	2880	90 45 25	2869	89 12 27	2862
9	Regulus W.	74 55 24	2211	76 43 35	2204	78 31 57	2196	80 20 31	2189
	MARS W.	72 52 18	2401	74 35 51	2393	76 19 36	2385	78 3 32	2376
	JUPITER W.	66 0 23	2270	67 47 6	2262	69 34 1	2255	71 21 7	2247
	α Aquilæ E.	81 25 29	2838	79 51 51	2838	78 18 12	2838	76 44 34	2828
	Fomalhaut E.	105 50 4	2608	104 11 20	2594	102 32 17	2581	100 52 56	2569
10	Regulus W.	89 25 47	2159	91 15 16	2154	93 4 53	2149	94 54 37	2145
	MARS W.	86 45 40	2346	88 30 32	2342	90 15 31	2337	92 0 37	2333
	JUPITER W.	80 19 10	2216	82 7 13	2212	83 55 23	2207	85 43 40	2203
	Spica W.	35 25 13	2173	37 14 21	2167	39 3 39	2161	40 53 6	2155
	α Aquilæ E.	68 58 5	2883	67 25 24	2898	65 53 2	2915	64 21 2	2935
	Fomalhaut E.	92 32 40	2527	90 52 5	2522	89 11 22	2517	87 30 33	2515

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	SUN W. JUPITER E. Spica E.	21 33 35 34 18 45 80 33 48	3142 2861 2782	23 0 54 32 45 36 78 58 56	3129 2855 2773	24 28 29 31 12 20 77 23 53	3116 2850 2765	25 56 19 29 38 57 75 48 39	3105 2845 2756
2	SUN W. Spica E. SATURN E.	33 18 51 67 49 36 100 4 12	3030 2713 2727	34 48 2 66 13 13 98 28 8	3040 2704 2717	36 17 25 64 36 38 96 51 51	3030 2695 2709	37 47 1 62 59 51 95 15 23	3019 2687 2699
3	SUN W. Spica E. SATURN E.	45 18 16 54 53 1 87 9 58	2967 2643 2654	46 49 10 53 15 4 85 32 16	2957 2633 2645	48 20 17 51 36 54 83 54 22	2946 2624 2636	49 51 37 49 58 32 82 16 16	2935 2615 2627
4	SUN W. Spica E. SATURN E. Antares E.	57 31 39 41 43 40 74 2 42 87 27 28	2883 2571 2582 2557	59 4 20 40 4 5 72 23 22 85 47 34	2873 2563 2573 2547	60 37 14 38 24 19 70 43 50 84 7 26	2861 2554 2564 2537	62 10 23 36 44 21 69 4 6 82 27 4	2851 2545 2555 2527
5	SUN W. SATURN E. Antares E.	69 59 35 60 42 20 74 1 50	2796 2512 2477	71 34 8 59 1 23 72 20 5	2785 2503 2467	73 8 56 57 20 14 70 38 6	2774 2495 2457	74 43 58 55 38 54 68 55 52	2768 2487 2447
6	SUN W. Regulus W. MARS W. SATURN E. Antares E.	82 42 46 39 39 22 39 8 55 47 9 28 60 21 8	2707 2405 2605 2450 2396	84 19 16 41 22 49 40 47 43 45 27 5 58 37 27	2697 2394 2594 2444 2386	85 56 0 43 6 32 42 26 46 43 44 33 56 53 32	2686 2384 2383 2438 2375	87 32 59 44 50 30 44 6 5 42 1 53 55 9 22	2675 2373 2371 2433 2365
7	SUN W. Regulus W. MARS W. Antares E. α Aquilæ E.	95 41 36 53 34 10 52 26 34 46 24 51 99 57 58	2621 2321 2516 2315 2046	97 20 3 55 19 39 54 7 25 44 39 13 98 26 37	2610 2311 2505 2305 2030	98 58 44 57 5 22 55 48 31 42 53 21 96 54 56	2599 2301 2504 2296 2016	100 37 40 58 51 20 57 29 52 41 7 15 95 22 57	2589 2291 2485 2286 2002
8	SUN W. Regulus W. MARS W. JUPITER W. Antares E. α Aquilæ E.	108 55 48 67 44 43 66 0 7 58 55 36 32 13 17 87 39 19	2540 2245 2436 2305 2240 2854	110 36 6 69 32 4 67 42 51 60 41 28 30 25 49 86 6 1	2531 2236 2427 2296 2232 2848	112 16 36 71 19 38 69 25 47 62 27 34 28 38 9 84 32 36	2522 2227 2418 2287 2223 2844	113 57 19 73 7 25 71 8 56 64 13 52 26 50 16 82 59 5	2513 2219 2409 2279 2214 2840
9	Regulus W. MARS W. JUPITER W. α Aquilæ E. Fomalhaut E.	82 9 15 79 47 38 73 8 24 75 11 0 99 13 19	2182 2371 2240 2845 2559	83 58 9 81 31 55 74 55 52 73 37 31 97 33 28	2176 2364 2234 2852 2549	85 47 13 83 16 21 76 43 29 72 4 11 95 53 23	2170 2358 2228 2860 2541	87 36 26 85 0 56 78 31 15 70 31 1 94 13 7	2165 2352 2222 2871 2533
10	Regulus W. MARS W. JUPITER W. Spica W. α Aquilæ E. Fomalhaut E.	96 44 27 93 45 48 87 32 3 42 42 41 62 49 28 85 49 40	2141 2329 2199 2151 2958 2512	98 34 23 95 31 5 89 20 32 44 32 23 61 18 23 84 8 44	2139 2326 2196 2147 2984 2512	100 24 23 97 16 26 91 9 5 46 22 11 59 47 50 82 27 48	2136 2324 2194 2143 3014 2512	102 14 27 99 1 51 92 57 42 48 12 4 58 17 54 80 46 52	2134 2321 2192 2141 3048 2515

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
11	JUPITER W.	94 46 22	2190	96 35 5	2189	98 23 49	2188	100 12 35	2188
	Spica W.	50 2 1	2138	51 52 2	2137	53 42 5	2136	55 32 10	2135
	α Aquilæ E.	56 48 41	2086	55 20 14	2129	53 52 39	2126	52 26 1	2090
	Fomalhaut E.	79 5 59	2518	77 25 11	2522	75 44 28	2527	74 3 53	2535
	α Pegasi E.	100 25 55	2296	98 39 49	2293	96 53 39	2291	95 7 26	2290
12	Spica W.	64 42 31	2141	66 32 28	2143	68 22 21	2147	70 12 9	2151
	SATURN W.	33 18 21	2235	35 5 57	2228	36 53 43	2223	38 41 36	2220
	Antares W.	18 50 57	2133	20 41 6	2136	22 31 10	2140	24 21 8	2144
	Fomalhaut E.	65 44 16	2596	64 5 15	2614	62 26 39	2634	60 48 30	2656
	α Pegasi E.	86 16 23	2297	84 30 19	2301	82 44 21	2307	80 58 31	2312
13	Spica W.	79 19 17	2180	81 8 15	2188	82 57 1	2196	84 45 35	2204
	SATURN W.	47 41 18	2227	49 29 5	2231	51 16 46	2237	53 4 19	2243
	Antares W.	33 29 7	2174	35 18 14	2181	37 7 10	2189	38 55 54	2198
	Fomalhaut E.	52 46 22	2809	51 12 6	2850	49 38 43	2895	48 6 18	2946
	α Pegasi E.	72 11 55	2356	70 27 17	2367	68 42 55	2380	66 58 52	2394
14	Spica W.	93 45 1	2254	95 32 8	2266	97 18 57	2278	99 5 29	2291
	SATURN W.	61 59 27	2224	63 45 50	2294	65 31 58	2305	67 17 50	2317
	Antares W.	47 56 5	2248	49 43 21	2260	51 30 19	2272	53 17 0	2284
	α Pegasi E.	58 24 2	2480	56 42 21	2502	55 1 10	2524	53 20 30	2548
	α Arietis E.	100 2 8	2265	98 15 14	2274	96 28 37	2287	94 42 18	2299
15	SATURN W.	76 2 45	2381	77 46 47	2395	79 30 29	2410	81 13 50	2424
	Antares W.	62 5 42	2352	63 50 26	2366	65 34 49	2381	67 18 51	2396
	α Arietis E.	85 55 24	2366	84 11 1	2382	82 27 0	2396	80 43 20	2411
	Aldebaran E.	117 57 25	2435	116 14 40	2447	114 32 12	2460	112 50 2	2472
16	SATURN W.	89 45 12	2503	91 26 21	2519	93 7 8	2535	94 47 32	2553
	Antares W.	75 53 29	2475	77 35 17	2492	79 16 42	2508	80 57 44	2525
	α Arietis E.	72 10 31	2492	70 29 6	2508	68 48 4	2524	67 7 26	2542
	Aldebaran E.	104 24 0	2545	102 43 49	2560	101 3 59	2576	99 24 31	2591
	VENUS E.	104 45 51	2853	103 12 32	2870	101 39 35	2887	100 7 0	2905
17	Antares W.	89 17 9	2608	90 55 53	2624	92 34 15	2640	94 12 15	2657
	α Aquilæ W.	44 4 2	4101	45 14 3	4032	46 25 11	3973	47 37 17	3921
	α Arietis E.	58 50 8	2628	57 11 51	2646	55 33 58	2663	53 56 28	2681
	Aldebaran E.	91 12 38	2673	89 35 22	2690	87 58 29	2707	86 21 58	2724
	VENUS E.	92 29 44	2994	90 59 24	3013	89 29 27	3030	87 59 52	3048
18	Antares W.	102 16 42	2738	103 52 31	2753	105 28 0	2769	107 3 8	2784
	α Aquilæ W.	53 48 57	3745	55 4 57	3721	56 21 22	3701	57 38 8	3684
	α Arietis E.	45 54 49	2767	44 19 38	2784	42 44 49	2801	41 10 23	2819
	Aldebaran E.	78 24 56	2807	76 50 37	2823	75 16 39	2839	73 43 2	2856
	VENUS E.	80 37 26	3137	79 10 1	3154	77 42 57	3172	76 16 14	3188
	SUN E.	125 35 1	3075	124 6 21	3091	122 38 1	3108	121 10 1	3124
19	α Aquilæ W.	64 5 43	3631	65 23 44	3624	66 41 52	3621	68 0 4	3627
	Fomalhaut W.	39 23 35	3898	40 36 57	3847	41 51 11	3802	43 6 11	3764
	α Arietis E.	33 23 51	2906	31 51 40	2924	30 19 52	2942	28 48 27	2961
	Aldebaran E.	66 0 10	2935	64 28 36	2950	62 57 21	2966	61 26 26	2981

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
		° ' "		° ' "		° ' "		° ' "	
11	JUPITER W.	102 1 20	2189	103 50 4	2190	105 38 47	2192	107 27 27	2194
	Spica W.	57 22 16	2135	59 12 22	2136	61 2 27	2137	62 52 30	2138
	α Aquilæ E.	51 0 27	2289	49 36 3	2256	48 12 56	2431	46 51 14	2516
	Fomalhaut E.	72 23 29	2344	70 43 17	2354	69 3 19	2566	67 23 38	2580
	α Pegasi E.	93 21 12	2289	91 34 57	2290	89 48 43	2291	88 2 31	2294
12	Spica W.	72 1 50	2156	73 51 24	2161	75 40 51	2167	77 30 9	2173
	SATURN W.	40 29 33	2219	42 17 32	2220	44 5 30	2221	45 53 26	2224
	Antares W.	26 11 0	2149	28 0 45	2155	29 50 21	2160	31 39 49	2167
	Fomalhaut E.	59 10 51	2681	57 33 45	2708	55 57 16	2738	54 21 27	2772
	α Pegasi E.	79 12 49	2329	77 27 17	2327	75 41 57	2335	73 56 49	2345
13	Spica W.	86 33 57	2223	88 22 5	2223	90 9 59	2233	91 57 38	2243
	SATURN W.	54 51 43	2240	56 38 57	2258	58 25 59	2265	60 12 50	2274
	Antares W.	40 44 25	2207	42 32 42	2216	44 20 45	2227	46 8 33	2237
	Fomalhaut E.	46 34 57	3001	45 4 45	3062	43 35 49	3130	42 8 16	3206
	α Pegasi E.	65 15 8	2409	63 31 46	2424	61 48 46	2442	60 6 11	2460
14	Spica W.	100 51 42	2303	102 37 37	2317	104 23 12	2331	106 8 27	2344
	SATURN W.	69 3 25	2328	70 48 43	2342	72 33 42	2354	74 18 23	2367
	Antares W.	55 3 23	2297	56 49 27	2310	58 35 12	2324	60 20 37	2337
	α Pegasi E.	51 40 24	2574	50 0 54	2602	48 22 2	2632	46 43 51	2662
	α Arietis E.	92 56 17	2311	91 10 34	2325	89 25 11	2338	87 40 7	2353
15	SATURN W.	82 56 50	2440	84 39 28	2455	86 21 45	2470	88 3 40	2487
	Antares W.	69 2 31	2412	70 45 49	2427	72 28 45	2443	74 11 18	2459
	α Arietis E.	79 0 1	2427	77 17 5	2443	75 34 31	2458	73 52 19	2475
	Aldebaran E.	111 8 10	2487	109 26 38	2500	107 45 25	2515	106 4 32	2530
16	SATURN W.	96 27 32	2569	98 7 9	2587	99 46 22	2604	101 25 12	2621
	Antares W.	82 38 23	2541	84 18 39	2558	85 58 32	2574	87 38 2	2591
	α Arietis E.	65 27 11	2559	63 47 20	2576	62 7 52	2593	60 28 48	2611
	Aldebaran E.	97 45 24	2608	96 6 40	2624	94 28 17	2640	92 50 16	2657
	VENUS E.	98 34 48	2923	97 2 58	2941	95 31 31	2958	94 0 26	2977
17	Antares W.	95 49 52	2674	97 27 7	2690	99 4 0	2706	100 40 32	2722
	α Aquilæ W.	48 50 15	2876	50 3 59	2836	51 18 24	2802	52 33 24	2770
	α Arietis E.	52 19 22	2698	50 42 39	2715	49 6 19	2733	47 30 23	2750
	Aldebaran E.	84 45 50	2740	83 10 3	2757	81 34 39	2774	79 59 37	2790
	VENUS E.	86 30 39	3066	85 1 48	3084	83 33 19	3102	82 5 12	3119
18	Antares W.	108 37 57	2799	110 12 26	2813	111 46 37	2828	113 20 29	2842
	α Aquilæ W.	58 55 12	2669	60 12 32	2657	61 30 5	2647	62 47 49	2637
	α Arietis E.	39 36 20	2836	38 2 39	2854	36 29 21	2871	34 56 25	2888
	Aldebaran E.	72 9 47	2872	70 36 52	2888	69 4 18	2904	67 32 4	2920
	VENUS E.	74 49 51	3205	73 23 48	3221	71 58 4	3238	70 32 40	3253
	SUN E.	119 42 21	3141	118 15 1	3156	116 47 59	3172	115 21 16	3187
19	α Aquilæ W.	69 18 20	2615	70 36 38	2623	71 54 58	2612	73 13 19	2613
	Fomalhaut W.	44 21 51	2729	45 38 7	2698	46 54 56	2672	48 12 13	2649
	α Arietis E.	27 17 25	2980	25 46 47	3001	24 16 36	3024	22 46 53	3047
	Aldebaran E.	59 55 50	2997	58 25 33	3011	56 55 34	3026	55 25 54	3041

GREENWICH MEAN TIME.									
LUNAR DISTANCES.									
Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
19	VENUS E.	69 7 34	3470	67 42 47	3485	66 18 18	3300	64 54 7	3314
	SUN E.	113 54 51	3408	112 28 44	3416	111 2 54	3431	109 37 21	3443
20	α Aquilæ W.	74 31 39	3614	75 49 58	3615	77 8 16	3628	78 26 31	3640
	Fomalhaut W.	49 29 55	3628	50 47 59	3609	52 6 24	3593	53 25 6	3578
	Aldebaran E.	53 56 32	3056	52 27 28	3070	50 58 42	3085	49 30 14	3099
	VENUS E.	57 57 16	3384	56 34 41	3396	55 12 20	3408	53 50 13	3421
	SUN E.	102 33 26	3306	101 9 22	3318	99 45 31	3328	98 21 52	3338
21	α Aquilæ W.	84 56 59	3638	86 14 52	3643	87 32 40	3648	88 50 23	3653
	Fomalhaut W.	60 2 1	3526	61 21 56	3519	62 41 59	3513	64 2 9	3506
	α Pegasi W.	37 16 1	3481	38 36 46	3460	39 57 55	3440	41 19 26	3423
	Aldebaran E.	42 12 21	3175	40 45 42	3191	39 19 22	3208	37 53 22	3225
	VENUS E.	47 2 57	3476	45 42 6	3487	44 21 27	3497	43 0 59	3506
	SUN E.	91 26 23	3383	90 3 47	3389	88 41 18	3397	87 18 58	3402
22	α Aquilæ W.	95 17 29	3682	96 34 35	3689	97 51 34	3695	99 8 26	3703
	Fomalhaut W.	70 44 36	3481	72 5 21	3478	73 26 10	3473	74 47 4	3470
	α Pegasi W.	48 11 22	3358	49 34 27	3348	50 57 43	3339	52 21 9	3330
	VENUS E.	36 21 17	3553	35 1 51	3563	33 42 36	3573	32 23 32	3583
	SUN E.	80 28 50	3426	79 7 3	3430	77 45 20	3431	76 23 39	3434
23	Fomalhaut W.	81 32 32	3453	82 53 49	3450	84 15 9	3446	85 36 33	3443
	α Pegasi W.	59 20 43	3293	60 45 3	3285	62 9 32	3278	63 34 9	3271
	SUN E.	69 35 41	3438	68 14 7	3436	66 52 31	3435	65 30 54	3433
24	Fomalhaut W.	92 24 27	3428	93 46 12	3425	95 8 0	3422	96 29 52	3420
	α Pegasi W.	70 39 16	3236	72 4 42	3229	73 30 17	3221	74 56 1	3214
	α Arietis W.	27 14 25	3121	28 42 9	3111	30 10 5	3101	31 38 13	3092
	SUN E.	58 42 8	3417	57 20 11	3413	55 58 9	3408	54 36 1	3402
25	α Pegasi W.	82 6 51	3177	83 33 28	3168	85 0 15	3160	86 27 12	3153
	α Arietis W.	39 1 41	3047	40 30 56	3038	42 0 22	3029	43 29 59	3020
	SUN E.	47 43 42	3370	46 20 51	3363	44 57 52	3355	43 34 44	3346
26	α Pegasi W.	93 44 22	3111	95 12 18	3104	96 40 23	3095	98 8 39	3087
	α Arietis W.	51 0 59	2972	52 31 47	2962	54 2 48	2951	55 34 2	2942
	SUN E.	36 36 35	3301	35 12 25	3292	33 48 4	3282	32 23 31	3272
27	α Arietis W.	63 13 24	2890	64 45 56	2879	66 18 42	2868	67 51 42	2857
	Aldebaran W.	32 2 12	3104	33 30 17	3075	34 58 57	3049	36 28 9	3025
	SUN E.	25 17 46	3219	23 51 59	3208	22 25 59	3197	20 59 46	3185
30	SUN W.	10 4 20	2948	11 35 38	2938	13 7 9	2927	14 38 53	2917
	Spica E.	64 51 32	2629	63 13 16	2619	61 34 47	2610	59 56 5	2601
	SATURN E.	96 37 9	2656	94 59 30	2646	93 21 37	2636	91 43 31	2626
	Antares E.	110 38 30	2621	109 0 3	2611	107 21 23	2601	105 42 30	2592
31	SUN W.	22 20 46	2868	23 53 46	2859	25 26 58	2849	27 0 22	2841
	Spica E.	51 39 31	2557	49 59 37	2548	48 19 31	2540	46 39 14	2533
	SATURN E.	83 29 52	2582	81 50 32	2573	80 11 0	2555	78 31 17	2548
	Antares E.	97 24 52	2546	95 44 43	2538	94 4 22	2529	92 23 49	2521

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
19	VENUS E. SUN E.	63 30 12 108 12 3	3329 3257	62 6 34 106 47 1	3343 3270	60 43 12 105 22 15	3357 3282	59 20 6 103 57 43	3371 3295
20	α Aquilæ W. Fomalhaut W. Aldebaran E. VENUS E. SUN E.	79 44 44 54 44 4 48 2 3 52 28 20 96 58 25	3623 3565 3114 3433 3348	81 2 53 56 3 16 46 34 11 51 6 41 95 35 9	3626 3555 3129 3444 3358	82 20 59 57 22 40 45 6 36 49 45 14 94 12 4	3630 3545 3143 3455 3366	83 39 1 58 42 15 43 39 19 48 24 0 92 49 9	3634 3533 3159 3465 3374
21	α Aquilæ W. Fomalhaut W. α Pegasi W. Aldebaran E. VENUS E. SUN E.	90 8 0 65 22 27 42 41 17 36 27 43 41 40 42 85 56 44	3639 3500 3408 3344 3515 3408	91 25 31 66 42 51 44 3 25 35 2 26 40 20 35 84 34 37	3663 3495 3393 3265 3525 3414	92 42 57 68 3 21 45 25 50 33 37 33 39 0 39 83 12 36	3670 3490 3380 3287 3535 3419	94 0 16 69 23 56 46 48 29 32 13 6 37 40 53 81 50 41	3676 3486 3368 3310 3544 3423
22	α Aquilæ W. Fomalhaut W. α Pegasi W. VENUS E. SUN E.	100 25 10 76 8 2 53 44 46 31 4 39 75 2 1	3710 3466 3322 3594 3436	101 41 46 77 29 4 55 8 32 29 45 58 73 40 25	3718 3463 3314 3605 3437	102 58 14 78 50 9 56 32 27 28 27 29 72 18 50	3727 3459 3306 3618 3437	104 14 33 80 11 19 57 56 31 27 9 14 70 57 15	3735 3456 3300 3631 3438
23	Fomalhaut W. α Pegasi W. SUN E.	86 58 1 64 58 54 64 9 15	3440 3265 3431	88 19 32 66 23 47 62 47 34	3437 3258 3428	89 41 7 67 48 48 61 25 49	3434 3250 3425	91 2 45 69 13 58 60 4 1	3431 3243 3421
24	Fomalhaut W. α Pegasi W. α Arietis W. SUN E.	97 51 46 76 21 53 33 6 32 53 13 47	3417 3207 3085 3397	99 13 43 77 47 54 34 35 2 51 51 27	3415 3199 3073 3390	100 35 43 79 14 4 36 3 44 50 28 59	3413 3198 3065 3384	101 57 45 80 40 23 37 32 37 49 6 24	3410 3184 3056 3378
25	α Pegasi W. α Arietis W. SUN E.	87 54 18 44 59 47 42 11 26	3144 3010 3338	89 21 34 46 29 47 40 47 58	3136 3001 3330	90 49 0 47 59 59 39 24 21	3128 2991 3321	92 16 36 49 30 23 38 0 34	3119 2981 3311
26	α Pegasi W. α Arietis W. SUN E.	99 37 4 57 5 28 30 58 47	3079 2931 3262	101 5 39 58 37 8 29 33 51	3071 2921 3251	102 34 24 60 9 0 28 8 42	3064 2911 3240	104 3 18 61 41 5 26 43 20	3056 2900 3230
27	α Arietis W. Aldebaran W. SUN E.	69 24 56 37 57 51 19 33 19	2847 3001 3174	70 58 23 39 28 2 18 6 39	2835 2981 3163	72 32 5 40 58 39 16 39 45	2825 2960 3151	74 6 1 42 29 42 15 12 37	2814 2940 3139
30	SUN W. Spica E. SATURN E. Antares E.	16 10 50 58 17 11 90 5 12 104 3 24	2907 2591 2618 2583	17 43 0 56 38 4 88 26 41 102 24 5	2897 2583 2608 2573	19 15 23 54 58 45 86 47 57 100 44 33	2887 2574 2599 2564	20 47 58 53 19 14 85 9 1 99 4 49	2877 2565 2590 2555
31	SUN W. Spica E. SATURN E. Antares E.	28 33 57 44 58 47 76 51 24 90 43 5	2891 2526 2550 2512	30 7 44 43 18 10 75 11 20 89 2 9	2823 2518 2542 2504	31 41 42 41 37 22 73 31 5 87 21 2	2814 2511 2535 2496	33 15 52 39 56 24 71 50 40 85 39 43	2806 2504 2527 2489

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Sideral Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to		Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.	Subtracted from Apparent Time.				
SUN.	1	^h 8 ^m 47 ^s 30.86	9.700	N. 17 54 7.6	-38.16	15 48.08	66.61	^m 6 ^s 4.95	0.156		
Mon.	2	8 51 23.36	9.674	17 38 42.9	38.88	15 48.21	66.52	6 0.91	0.181		
Tues.	3	8 55 15.24	9.649	17 23 1.2	39.59	15 48.35	66.44	5 56.24	0.207		
Wed.	4	8 59 6.51	9.623	17 7 2.5	-40.29	15 48.50	66.35	5 50.96	0.233		
Thur.	5	9 2 57.15	9.597	16 50 47.4	40.97	15 48.65	66.26	5 45.06	0.259		
Frid.	6	9 6 47.18	9.572	16 34 16.0	41.64	15 48.80	66.17	5 38.56	0.284		
Sat.	7	9 10 36.60	9.547	16 17 28.7	-42.30	15 48.95	66.09	5 31.44	0.309		
SUN.	8	9 14 25.41	9.522	16 0 25.7	42.95	15 49.11	66.01	5 23.72	0.334		
Mon.	9	9 18 13.63	9.497	15 43 7.4	43.58	15 49.27	65.92	5 15.40	0.359		
Tues.	10	9 22 1.25	9.473	15 25 34.1	-44.20	15 49.44	65.84	5 6.50	0.383		
Wed.	11	9 25 48.30	9.449	15 7 46.0	44.81	15 49.60	65.76	4 57.02	0.407		
Thur.	12	9 29 34.79	9.425	14 49 43.4	45.41	15 49.77	65.68	4 46.97	0.430		
Frid.	13	9 33 20.71	9.402	14 31 26.7	-45.99	15 49.94	65.60	4 36.37	0.453		
Sat.	14	9 37 6.09	9.380	14 12 56.0	46.56	15 50.12	65.52	4 25.23	0.475		
SUN.	15	9 40 50.95	9.358	13 54 11.8	47.12	15 50.29	65.44	4 13.56	0.497		
Mon.	16	9 44 35.28	9.337	13 35 14.2	-47.67	15 50.47	65.37	4 1.37	0.518		
Tues.	17	9 48 19.11	9.316	13 16 3.6	48.21	15 50.65	65.29	3 48.68	0.539		
Wed.	18	9 52 2.45	9.296	12 56 40.2	48.73	15 50.84	65.22	3 35.50	0.559		
Thur.	19	9 55 45.31	9.276	12 37 4.4	-49.24	15 51.02	65.15	3 21.84	0.579		
Frid.	20	9 59 27.71	9.257	12 17 16.5	49.74	15 51.21	65.08	3 7.72	0.598		
Sat.	21	10 3 9.65	9.239	11 57 16.8	50.23	15 51.40	65.01	2 53.15	0.616		
SUN.	22	10 6 51.16	9.221	11 37 5.6	-50.70	15 51.60	64.94	2 38.15	0.634		
Mon.	23	10 10 32.24	9.203	11 16 43.3	51.16	15 51.80	64.88	2 22.71	0.652		
Tues.	24	10 14 12.90	9.186	10 56 10.1	51.60	15 52.00	64.82	2 6.86	0.669		
Wed.	25	10 17 53.16	9.169	10 35 26.4	-52.03	15 52.21	64.76	1 50.61	0.685		
Thur.	26	10 21 33.02	9.153	10 14 32.6	52.45	15 52.42	64.70	1 33.96	0.701		
Frid.	27	10 25 12.50	9.138	9 53 29.0	52.85	15 52.64	64.64	1 16.94	0.717		
Sat.	28	10 28 51.62	9.123	9 32 16.0	-53.24	15 52.86	64.59	0 59.55	0.732		
SUN.	29	10 32 30.38	9.108	9 10 53.8	53.61	15 53.08	64.54	0 41.80	0.747		
Mon.	30	10 36 8.79	9.094	8 49 22.9	53.97	15 53.31	64.49	0 23.71	0.761		
Tues.	31	10 39 46.88	9.080	8 27 43.6	54.31	15 53.54	64.44	0 5.29	0.774		
Wed.	32	10 43 24.64	9.067	N. 8 5 56.2	-54.63	15 53.77	64.40	0 13.44	0.787		

NOTE.—The mean time of semidiameter passing may be found by subtracting 0.18 from the sideral time.

The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing.

AT GREENWICH MEAN NOON.

AT GREENWICH MEAN NOON.									
Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Subtracted from	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.	
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Added to Mean Time.			
<i>SUN.</i>	1	^h 8 ^m 47 ^s 29.88	^s 9.701	[°] N. 17 ['] 54 ["] 11.4	["] -38.16	^m 6 ^s 4.96	^s 0.156	^h 8 ^m 41 ^s 24.91	
Mon.	2	8 51 22.39	9.676	17 38 46.8	38.88	6 0.92	0.182	8 45 21.47	
Tues.	3	8 55 14.29	9.650	17 23 5.0	39.59	5 56.26	0.208	8 49 18.03	
Wed.	4	8 59 5.57	9.624	17 7 6.4	-40.29	5 50.99	0.233	8 53 14.58	
Thur.	5	9 2 56.23	9.598	16 50 51.2	40.97	5 45.09	0.258	8 57 11.14	
Frid.	6	9 6 46.28	9.572	16 34 19.8	41.64	5 38.58	0.284	9 1 7.70	
Sat.	7	9 10 35.72	9.547	16 17 32.5	-42.30	5 31.47	0.309	9 5 4.25	
<i>SUN.</i>	8	9 14 24.56	9.522	16 0 29.5	42.95	5 23.75	0.334	9 9 0.81	
Mon.	9	9 18 12.79	9.498	15 43 11.2	43.58	5 15.43	0.359	9 12 57.36	
Tues.	10	9 22 0.45	9.474	15 25 37.8	-44.20	5 6.53	0.384	9 16 53.92	
Wed.	11	9 25 47.52	9.450	15 7 49.6	44.81	4 57.05	0.408	9 20 50.47	
Thur.	12	9 29 34.03	9.427	14 49 47.0	45.41	4 47.00	0.431	9 24 47.03	
Frid.	13	9 33 19.99	9.404	14 31 30.2	-45.99	4 36.40	0.453	9 28 43.59	
Sat.	14	9 37 5.40	9.381	14 12 59.4	46.56	4 25.26	0.475	9 32 40.14	
<i>SUN.</i>	15	9 40 50.29	9.359	13 54 15.0	47.13	4 13.59	0.497	9 36 36.70	
Mon.	16	9 44 34.66	9.338	13 35 17.3	-47.68	4 1.41	0.518	9 40 33.25	
Tues.	17	9 48 18.52	9.317	13 16 6.6	48.21	3 48.71	0.539	9 44 29.81	
Wed.	18	9 52 1.89	9.297	12 56 43.1	48.73	3 35.53	0.559	9 48 26.36	
Thur.	19	9 55 44.79	9.278	12 37 7.2	-49.25	3 21.87	0.579	9 52 22.92	
Frid.	20	9 59 27.22	9.259	12 17 19.1	49.75	3 7.75	0.598	9 56 19.47	
Sat.	21	10 3 9.21	9.240	11 57 19.2	50.24	2 53.18	0.616	10 0 16.03	
<i>SUN.</i>	22	10 6 50.75	9.222	11 37 7.8	-50.71	2 38.17	0.634	10 4 12.58	
Mon.	23	10 10 31.87	9.205	11 16 45.3	51.16	2 22.73	0.652	10 8 9.14	
Tues.	24	10 14 12.57	9.188	10 56 11.9	51.60	2 6.88	0.669	10 12 5.69	
Wed.	25	10 17 52.87	9.171	10 35 28.0	-52.04	1 50.63	0.685	10 16 2.24	
Thur.	26	10 21 32.78	9.155	10 14 33.9	52.46	1 33.98	0.701	10 19 58.80	
Frid.	27	10 25 12.31	9.139	9 53 30.1	52.86	1 16.96	0.717	10 23 55.35	
Sat.	28	10 28 51.47	9.124	9 32 16.8	-53.25	0 59.56	0.732	10 27 51.91	
<i>SUN.</i>	29	10 32 30.27	9.110	9 10 54.4	53.62	0 41.81	0.747	10 31 48.46	
Mon.	30	10 36 8.73	9.096	8 49 23.2	53.97	0 23.72	0.761	10 35 45.01	
Tues.	31	10 39 46.86	9.082	8 27 43.6	54.31	0 5.29	0.774	10 39 41.57	
Wed.	32	10 43 24.67	9.069	N. 8 5 56.0	-54.65	0 13.45	0.787	10 43 38.12	
NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing.								Diff. for 1 Hour, +9 ^s .8565. (Table III.)	

NOTE.—The semi-diameter for mean noon may be assumed the same as that for apparent noon.

The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing.

Diff. for 1 Hour,
+9°.8565.
(Table III.)

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ'					
1	213	129 26 19.9	25 35.5	143.63	— 0.52	0.0063308	—25.2	h m s 15 16 4.60
2	214	130 23 47.4	23 2.9	143.66	0.60	0.0062692	26.1	15 12 8.69
3	215	131 21 15.7	20 31.0	143.69	0.65	0.0062055	27.0	15 8 12.78
4	216	132 18 44.7	17 59.9	143.72	— 0.67	0.0061397	—27.8	15 4 16.87
5	217	133 16 14.4	15 29.4	143.75	0.67	0.0060720	28.6	15 0 20.96
6	218	134 13 44.9	12 59.8	143.78	0.64	0.0060024	29.3	14 56 25.05
7	219	135 11 16.2	10 31.0	143.82	— 0.57	0.0059311	—30.0	14 52 29.14
8	220	136 8 48.4	8 3.0	143.85	0.48	0.0058585	30.6	14 48 33.23
9	221	137 6 21.4	5 35.8	143.89	0.37	0.0057846	31.1	14 44 37.32
10	222	138 3 55.3	3 9.6	143.93	— 0.24	0.0057093	—31.6	14 40 41.41
11	223	139 1 30.4	0 44.5	143.98	— 0.11	0.0056329	32.1	14 36 45.50
12	224	139 59 6.5	58 20.5	144.03	+ 0.03	0.0055554	32.5	14 32 49.59
13	225	140 56 43.8	55 57.6	144.08	+ 0.16	0.0054769	—32.9	14 28 53.68
14	226	141 54 22.4	53 36.1	144.14	0.28	0.0053974	33.3	14 24 57.77
15	227	142 52 2.4	51 16.0	144.20	0.38	0.0053170	33.7	14 21 1.86
16	228	143 49 43.9	48 57.4	144.26	+ 0.45	0.0052355	—34.1	14 17 5.95
17	229	144 47 26.8	46 40.1	144.32	0.50	0.0051529	34.6	14 13 10.04
18	230	145 45 11.3	44 24.5	144.39	0.53	0.0050693	35.1	14 9 14.13
19	231	146 42 57.6	42 10.6	144.46	+ 0.51	0.0049843	—35.7	14 5 18.23
20	232	147 40 45.4	39 58.3	144.53	0.48	0.0048979	36.3	14 1 22.32
21	233	148 38 35.0	37 47.8	144.60	0.41	0.0048102	36.9	13 57 26.41
22	234	149 36 26.3	35 39.0	144.67	+ 0.32	0.0047209	—37.6	13 53 30.50
23	235	150 34 19.4	33 32.0	144.75	0.21	0.0046299	38.3	13 49 34.59
24	236	151 32 14.1	31 26.6	144.82	+ 0.09	0.0045372	39.0	13 45 38.68
25	237	152 30 10.6	29 23.0	144.89	— 0.04	0.0044426	—39.8	13 41 42.77
26	238	153 28 8.8	27 21.0	144.96	0.17	0.0043461	40.5	13 37 46.86
27	239	154 26 8.7	25 20.8	145.02	0.28	0.0042478	41.3	13 33 50.95
28	240	155 24 10.1	23 22.1	145.09	— 0.39	0.0041476	—42.1	13 29 55.04
29	241	156 22 13.2	21 25.0	145.15	0.48	0.0040456	42.9	13 25 59.14
30	242	157 20 17.7	19 29.4	145.22	0.55	0.0039419	43.6	13 22 3.23
31	243	158 18 23.8	17 35.4	145.28	0.57	0.0038365	44.3	13 18 7.32
32	244	159 16 31.4	15 42.9	145.35	— 0.57	0.0037294	—44.9	13 14 11.41
NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ' to the mean equinox of January 0 ^h .								
								Diff. for 1 Hour, —9 ^h 8296. (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.									
	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
1	15 46.7	15 50.4	57 48.0	+1.14	58 1.4	+1.08	2 19.4	1.92	2.8
2	15 53.8	15 57.0	58 14.0	1.02	58 25.8	0.95	3 5.7	1.96	3.8
3	16 0.0	16 2.8	58 36.7	0.88	58 46.8	0.80	3 53.4	2.03	4.8
4	16 5.3	16 7.5	58 56.0	+0.73	59 4.2	+0.64	4 43.7	2.16	5.8
5	16 9.5	16 11.1	59 11.4	0.56	59 17.6	0.46	5 37.5	2.33	6.8
6	16 12.5	16 13.5	59 22.5	0.35	59 26.1	+0.24	6 35.4	2.49	7.8
7	16 14.0	16 14.2	59 28.2	+0.11	59 28.7	-0.04	7 36.6	2.60	8.8
8	16 13.8	16 12.9	59 27.3	-0.19	59 24.1	0.35	8 39.3	2.61	9.8
9	16 11.5	16 9.4	59 18.8	0.53	59 11.3	0.71	9 40.8	2.51	10.8
10	16 6.8	16 3.7	59 1.8	-0.88	58 50.2	-1.05	10 39.1	2.34	11.8
11	16 0.0	15 55.7	58 36.5	1.22	58 20.9	1.36	11 33.0	2.16	12.8
12	15 51.0	15 46.0	58 3.8	1.48	57 45.3	1.59	12 22.7	1.99	13.8
13	15 40.7	15 35.2	57 25.7	-1.66	57 5.5	-1.70	13 9.0	1.87	14.8
14	15 29.6	15 24.0	56 45.0	1.70	56 24.6	1.68	13 53.1	1.80	15.8
15	15 18.6	15 13.4	56 4.6	1.63	55 45.4	1.55	14 35.9	1.78	16.8
16	15 8.5	15 4.0	55 27.4	-1.44	55 10.9	-1.30	15 18.7	1.79	17.8
17	14 59.9	14 56.4	54 56.1	1.15	54 43.2	0.98	16 2.3	1.85	18.8
18	14 53.5	14 51.3	54 32.6	0.79	54 24.3	0.59	16 47.5	1.92	19.8
19	14 49.7	14 48.8	54 18.4	-0.38	54 15.1	-0.17	17 34.7	2.01	20.8
20	14 48.6	14 49.1	54 14.4	+0.05	54 16.3	+0.27	18 24.1	2.09	21.8
21	14 50.3	14 52.2	54 20.8	0.48	54 27.8	0.68	19 15.1	2.15	22.8
22	14 54.8	14 58.0	54 37.2	+0.88	54 48.9	+1.06	20 6.9	2.17	23.8
23	15 1.7	15 6.0	55 2.7	1.23	55 18.3	1.37	20 58.7	2.14	24.8
24	15 10.7	15 15.7	55 35.5	1.49	55 54.0	1.58	21 49.4	2.09	25.8
25	15 21.0	15 26.5	56 13.5	+1.65	56 33.6	+1.69	22 38.8	2.02	26.8
26	15 32.0	15 37.5	56 54.0	1.69	57 14.2	1.67	23 26.8	1.98	27.8
27	15 42.9	15 48.1	57 34.0	1.61	57 52.9	1.53	0		28.8
28	15 52.9	15 57.3	58 10.6	+1.42	58 26.9	+1.28	0 14.0	1.96	0.4
29	16 1.3	16 4.7	58 41.4	1.13	58 54.0	0.97	1 1.2	1.98	1.4
30	16 7.6	16 9.9	59 4.6	0.80	59 13.1	0.62	1 49.4	2.05	2.4
31	16 11.7	16 12.8	59 19.5	0.45	59 23.8	+0.28	2 39.9	2.16	3.4
32	16 13.5	16 13.6	59 26.2	+0.13	59 26.8	-0.02	3 33.5	2.30	4.4

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 1.					TUESDAY 3.				
0	10 56 31.40	2.0198	N. 3 14 6.0	15.215	0	12 35 3.46	2.1132	S. 9 0 42.0	14.902
1	10 58 32.60	2.0201	2 58 52.4	15.238	1	12 37 10.49	2.1191	9 15 34.9	14.862
2	11 0 33.81	2.0204	2 43 37.4	15.260	2	12 39 17.75	2.1230	9 30 25.4	14.820
3	11 2 35.04	2.0207	2 28 21.2	15.280	3	12 41 25.25	2.1271	9 45 13.3	14.777
4	11 4 36.29	2.0211	2 13 3.8	15.300	4	12 43 33.00	2.1312	9 59 58.6	14.733
5	11 6 37.57	2.0216	1 57 45.2	15.319	5	12 45 40.99	2.1355	10 14 41.3	14.688
6	11 8 38.89	2.0222	1 42 25.5	15.337	6	12 47 49.23	2.1395	10 29 21.2	14.642
7	11 10 40.24	2.0228	1 27 4.8	15.353	7	12 49 57.73	2.1438	10 43 58.3	14.593
8	11 12 41.63	2.0236	1 11 43.2	15.367	8	12 52 6.49	2.1482	10 58 32.4	14.542
9	11 14 43.07	2.0244	0 56 20.8	15.380	9	12 54 15.51	2.1526	11 13 3.4	14.491
10	11 16 44.56	2.0253	0 40 57.6	15.392	10	12 56 24.80	2.1572	11 27 31.3	14.439
11	11 18 46.11	2.0262	0 25 33.7	15.404	11	12 58 34.37	2.1617	11 41 56.1	14.386
12	11 20 47.71	2.0273	N. 0 10 9.1	15.414	12	13 0 44.21	2.1663	11 56 17.6	14.330
13	11 22 49.38	2.0284	S. 0 5 16.0	15.422	13	13 2 54.33	2.1711	12 10 35.7	14.272
14	11 24 51.12	2.0295	0 20 41.6	15.430	14	13 5 4.74	2.1759	12 24 50.3	14.213
15	11 26 52.92	2.0307	0 36 7.6	15.436	15	13 7 15.44	2.1807	12 39 1.3	14.153
16	11 28 54.80	2.0321	0 51 33.9	15.441	16	13 9 26.43	2.1857	12 53 8.7	14.092
17	11 30 56.77	2.0335	1 7 0.5	15.444	17	13 11 37.72	2.1907	13 7 12.3	14.028
18	11 32 58.82	2.0349	1 22 27.2	15.446	18	13 13 49.31	2.1958	13 21 12.1	13.964
19	11 35 0.96	2.0365	1 37 54.0	15.447	19	13 16 1.21	2.2009	13 35 8.0	13.897
20	11 37 3.20	2.0381	1 53 20.9	15.447	20	13 18 13.42	2.2060	13 48 59.8	13.829
21	11 39 5.53	2.0398	2 8 47.7	15.446	21	13 20 25.93	2.2112	14 2 47.5	13.760
22	11 41 7.97	2.0416	2 24 14.4	15.443	22	13 22 38.76	2.2165	14 16 31.0	13.689
23	11 43 10.52	2.0435	S. 2 39 40.9	15.439	23	13 24 51.91	2.2219	S. 14 30 10.2	13.617
MONDAY 2.					WEDNESDAY 4.				
0	11 45 13.19	2.0454	S. 2 55 7.1	15.434	0	13 27 5.39	2.2273	S. 14 43 45.0	13.543
1	11 47 15.97	2.0474	3 10 33.0	15.447	1	13 29 19.19	2.2328	14 57 15.3	13.468
2	11 49 18.88	2.0495	3 25 58.4	15.418	2	13 31 33.32	2.2383	15 10 41.1	13.391
3	11 51 21.91	2.0517	3 41 23.2	15.408	3	13 33 47.79	2.2439	15 24 2.2	13.312
4	11 53 25.08	2.0540	3 56 47.4	15.398	4	13 36 2.59	2.2495	15 37 18.5	13.231
5	11 55 28.39	2.0563	4 12 11.0	15.387	5	13 38 17.73	2.2552	15 50 29.9	13.149
6	11 57 31.83	2.0586	4 27 33.8	15.373	6	13 40 33.21	2.2609	16 3 36.4	13.066
7	11 59 35.42	2.0611	4 42 55.8	15.359	7	13 42 49.04	2.2667	16 16 37.8	12.980
8	12 1 39.17	2.0637	4 58 16.9	15.342	8	13 45 5.21	2.2725	16 29 34.0	12.893
9	12 3 43.07	2.0664	5 13 36.9	15.324	9	13 47 21.74	2.2782	16 42 25.0	12.805
10	12 5 47.13	2.0691	5 28 55.8	15.306	10	13 49 38.62	2.2843	16 55 10.6	12.715
11	12 7 51.36	2.0718	5 44 13.6	15.287	11	13 51 55.85	2.2902	17 7 50.8	12.624
12	12 9 55.75	2.0747	5 59 30.2	15.265	12	13 54 13.44	2.2962	17 20 25.5	12.531
13	12 12 0.32	2.0777	6 14 45.4	15.242	13	13 56 31.39	2.3022	17 32 54.5	12.436
14	12 14 5.07	2.0807	6 29 59.2	15.218	14	13 58 49.70	2.3083	17 45 17.8	12.340
15	12 16 10.01	2.0838	6 45 11.6	15.194	15	14 1 8.38	2.3144	17 57 35.3	12.242
16	12 18 15.13	2.0870	7 0 22.5	15.167	16	14 3 27.43	2.3206	18 9 46.8	12.142
17	12 20 20.45	2.0902	7 15 31.6	15.137	17	14 5 46.85	2.3267	18 21 52.3	12.041
18	12 22 25.96	2.0936	7 30 38.9	15.107	18	14 8 6.63	2.3328	18 33 51.7	11.938
19	12 24 31.68	2.0971	7 45 44.4	15.077	19	14 10 26.79	2.3391	18 45 44.9	11.833
20	12 26 37.61	2.1005	8 0 48.1	15.045	20	14 12 47.32	2.3455	18 57 31.7	11.728
21	12 28 43.74	2.1040	8 15 49.8	15.011	21	14 15 8.22	2.3519	19 9 12.2	11.620
22	12 30 50.09	2.1077	8 30 49.4	14.975	22	14 17 29.50	2.3578	19 20 46.1	11.510
23	12 32 56.66	2.1114	8 45 46.8	14.938	23	14 19 51.16	2.3641	19 32 13.4	11.399
24	12 35 3.46	2.1152	S. 9 0 42.0	14.901	24	14 22 13.19	2.3703	S. 19 43 34.0	11.287

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 5.					SATURDAY 7.				
0	14 22 13.19	2.3703	S. 19 43 34.0	11.287	0	16 22 50.20	2.6321	S. 26 6 20.1	4.128
1	14 24 35.60	2.3767	19 54 47.8	11.173	1	16 25 28.23	2.6355	26 10 22.4	3.949
2	14 26 58.39	2.3830	20 5 54.7	11.057	2	16 28 6.46	2.6387	26 14 14.0	3.770
3	14 29 21.56	2.3893	20 16 54.6	10.939	3	16 30 44.87	2.6417	26 17 54.8	3.589
4	14 31 45.10	2.3956	20 27 47.4	10.820	4	16 33 23.46	2.6446	26 21 24.7	3.408
5	14 34 9.03	2.4020	20 38 33.0	10.700	5	16 36 2.22	2.6473	26 24 43.7	3.225
6	14 36 33.34	2.4083	20 49 11.4	10.578	6	16 38 41.14	2.6499	26 27 51.7	3.043
7	14 38 58.03	2.4147	20 59 42.3	10.453	7	16 41 20.21	2.6524	26 30 48.8	2.860
8	14 41 23.10	2.4209	21 10 5.8	10.328	8	16 43 59.43	2.6548	26 33 34.9	2.676
9	14 43 48.54	2.4273	21 20 21.7	10.201	9	16 46 38.78	2.6569	26 36 9.9	2.491
10	14 46 14.37	2.4336	21 30 29.9	10.073	10	16 49 18.26	2.6590	26 38 33.8	2.306
11	14 48 40.57	2.4398	21 40 30.4	9.943	11	16 51 57.86	2.6608	26 40 46.6	2.120
12	14 51 7.15	2.4461	21 50 23.0	9.811	12	16 54 37.56	2.6625	26 42 48.2	1.934
13	14 53 34.10	2.4523	22 0 7.7	9.677	13	16 57 17.36	2.6641	26 44 38.7	1.748
14	14 56 1.43	2.4586	22 9 44.3	9.542	14	16 59 57.25	2.6654	26 46 18.0	1.562
15	14 58 29.13	2.4648	22 19 12.7	9.405	15	17 2 37.21	2.6666	26 47 46.1	1.374
16	15 0 57.20	2.4708	22 28 32.9	9.267	16	17 5 17.24	2.6677	26 49 2.9	1.187
17	15 3 25.63	2.4769	22 37 44.8	9.128	17	17 7 57.33	2.6686	26 50 8.5	0.999
18	15 5 54.43	2.4831	22 46 48.3	8.987	18	17 10 37.47	2.6693	26 51 2.8	0.812
19	15 8 23.60	2.4892	22 55 43.2	8.844	19	17 13 17.65	2.6698	26 51 45.9	0.624
20	15 10 53.13	2.4952	23 4 29.6	8.701	20	17 15 57.85	2.6702	26 52 17.7	0.436
21	15 13 23.02	2.5011	23 13 7.3	8.555	21	17 18 38.08	2.6705	26 52 38.2	0.248
22	15 15 53.26	2.5069	23 21 36.2	8.408	22	17 21 18.31	2.6706	26 52 47.4	- 0.059
23	15 18 23.85	2.5128	S. 23 29 56.2	8.259	23	17 23 58.55	2.6705	S. 26 52 45.3	+ 0.129
FRIDAY 6.					SUNDAY 8.				
0	15 20 54.79	2.5186	S. 23 38 7.3	8.109	0	17 26 38.77	2.6702	S. 26 52 31.9	0.328
1	15 23 26.08	2.5244	23 46 9.3	7.958	1	17 29 18.97	2.6698	26 52 7.2	0.140
2	15 25 57.72	2.5301	23 54 2.2	7.805	2	17 31 59.14	2.6692	26 51 31.3	0.693
3	15 28 29.69	2.5356	24 1 45.9	7.651	3	17 34 39.27	2.6684	26 50 44.1	0.881
4	15 31 1.99	2.5412	24 9 20.3	7.495	4	17 37 19.35	2.6675	26 49 45.6	1.068
5	15 33 34.63	2.5467	24 16 45.3	7.338	5	17 39 59.37	2.6664	26 48 35.9	1.256
6	15 36 7.59	2.5520	24 24 0.9	7.180	6	17 42 39.32	2.6652	26 47 14.9	1.443
7	15 38 40.87	2.5573	24 31 6.9	7.020	7	17 45 19.19	2.6638	26 45 42.8	1.629
8	15 41 14.47	2.5625	24 38 3.3	6.859	8	17 47 58.97	2.6621	26 43 59.4	1.816
9	15 43 48.37	2.5676	24 44 50.0	6.698	9	17 50 38.64	2.6603	26 42 4.9	2.001
10	15 46 22.58	2.5727	24 51 27.0	6.534	10	17 53 18.21	2.6585	26 39 59.3	2.187
11	15 48 57.09	2.5777	24 57 54.1	6.370	11	17 55 57.66	2.6566	26 37 42.5	2.372
12	15 51 31.90	2.5826	25 4 11.4	6.204	12	17 58 36.97	2.6541	26 35 14.7	2.556
13	15 54 7.00	2.5873	25 10 18.6	6.037	13	18 1 16.15	2.6517	26 32 35.8	2.740
14	15 56 42.38	2.5919	25 16 15.8	5.868	14	18 3 55.18	2.6492	26 29 45.9	2.923
15	15 59 18.03	2.5964	25 22 2.8	5.699	15	18 6 34.05	2.6464	26 26 45.0	3.107
16	16 1 53.95	2.6009	25 27 39.7	5.529	16	18 9 12.75	2.6436	26 23 33.1	3.288
17	16 4 30.14	2.6052	25 33 6.3	5.358	17	18 11 51.28	2.6406	26 20 10.4	3.469
18	16 7 6.58	2.6094	25 38 22.6	5.185	18	18 14 29.62	2.6374	26 16 36.8	3.650
19	16 9 43.27	2.6135	25 43 28.5	5.011	19	18 17 7.77	2.6342	26 12 52.4	3.829
20	16 12 20.20	2.6175	25 48 23.9	4.836	20	18 19 45.72	2.6307	26 8 57.3	4.008
21	16 14 57.37	2.6214	25 53 8.8	4.661	21	18 22 23.45	2.6271	26 4 51.5	4.186
22	16 17 34.77	2.6251	25 57 43.2	4.485	22	18 25 0.97	2.6234	26 0 35.0	4.363
23	16 20 12.38	2.6286	26 2 7.0	4.307	23	18 27 38.26	2.6195	25 56 7.9	4.539
24	16 22 50.20	2.6321	S. 26 6 20.1	4.128	24	18 30 15.31	2.6155	S. 25 51 30.3	4.714

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 9.					WEDNESDAY 11.				
0	18 30 15.31	2.6155	S. 25 51 30.3	4.714	0	20 29 19.96	2.3233	S. 19 8 26.0	11.489
1	18 32 52.12	2.6113	25 46 42.2	4.888	1	20 31 39.15	2.3164	18 56 53.7	11.588
2	18 35 28.67	2.6071	25 41 43.7	5.062	2	20 33 57.93	2.3096	18 45 15.5	11.687
3	18 38 4.97	2.6028	25 36 34.8	5.233	3	20 36 16.30	2.3027	18 33 31.3	11.785
4	18 40 41.00	2.5982	25 31 15.7	5.403	4	20 38 34.25	2.2958	18 21 41.3	11.881
5	18 43 16.75	2.5936	25 25 46.4	5.573	5	20 40 51.80	2.2890	18 9 45.6	11.974
6	18 45 52.23	2.5888	25 20 6.9	5.742	6	20 43 8.93	2.2821	17 57 44.4	12.066
7	18 48 27.41	2.5839	25 14 17.3	5.909	7	20 45 25.65	2.2753	17 45 37.7	12.157
8	18 51 2.30	2.5789	25 8 17.8	6.075	8	20 47 41.97	2.2685	17 33 25.6	12.245
9	18 53 36.88	2.5738	25 2 8.3	6.241	9	20 49 57.88	2.2618	17 21 8.3	12.332
10	18 56 11.16	2.5687	24 55 48.9	6.404	10	20 52 13.39	2.2551	17 8 45.7	12.418
11	18 58 45.13	2.5634	24 49 19.8	6.567	11	20 54 28.49	2.2484	16 56 18.1	12.501
12	19 1 18.77	2.5579	24 42 40.9	6.728	12	20 56 43.20	2.2418	16 43 45.6	12.583
13	19 3 52.08	2.5524	24 35 52.5	6.887	13	20 58 57.51	2.2352	16 31 8.2	12.663
14	19 6 25.06	2.5468	24 28 54.5	7.046	14	21 1 11.42	2.2285	16 18 26.0	12.742
15	19 8 57.70	2.5412	24 21 47.0	7.203	15	21 3 24.93	2.2220	16 5 39.2	12.822
16	19 11 30.00	2.5354	24 14 30.2	7.358	16	21 5 38.06	2.2156	15 52 47.8	12.899
17	19 14 1.95	2.5295	24 7 4.1	7.512	17	21 7 50.80	2.2091	15 39 52.0	12.967
18	19 16 33.54	2.5235	23 59 28.8	7.664	18	21 10 3.15	2.2027	15 26 51.8	13.038
19	19 19 4.77	2.5175	23 51 44.4	7.815	19	21 12 15.12	2.1963	15 13 47.4	13.108
20	19 21 35.64	2.5113	23 43 51.0	7.964	20	21 14 26.71	2.1900	15 0 38.8	13.177
21	19 24 6.15	2.5053	23 35 48.7	8.113	21	21 16 37.92	2.1838	14 47 26.1	13.244
22	19 26 36.28	2.4990	23 27 37.5	8.259	22	21 18 48.76	2.1775	14 34 9.5	13.309
23	19 29 6.03	2.4927	S. 23 19 17.6	8.404	23	21 20 59.22	2.1713	S. 14 20 49.0	13.373
TUESDAY 10.					THURSDAY 12.				
0	19 31 35.41	2.4864	S. 23 10 49.0	8.548	0	21 23 9.31	2.1652	S. 14 7 24.8	13.434
1	19 34 4.40	2.4800	23 2 11.9	8.689	1	21 25 19.04	2.1591	13 53 56.9	13.494
2	19 36 33.01	2.4735	22 53 26.3	8.829	2	21 27 28.40	2.1530	13 40 25.5	13.553
3	19 39 1.22	2.4669	22 44 32.4	8.968	3	21 29 37.40	2.1471	13 26 50.6	13.610
4	19 41 29.04	2.4604	22 35 30.2	9.105	4	21 31 46.05	2.1413	13 13 12.3	13.666
5	19 43 56.47	2.4538	22 26 19.8	9.240	5	21 33 54.35	2.1354	12 59 30.7	13.720
6	19 46 23.50	2.4472	22 17 1.4	9.373	6	21 36 2.30	2.1296	12 45 45.9	13.772
7	19 48 50.13	2.4404	22 7 35.0	9.506	7	21 38 9.90	2.1238	12 31 58.1	13.823
8	19 51 16.35	2.4337	21 58 0.7	9.637	8	21 40 17.16	2.1182	12 18 7.2	13.872
9	19 53 42.17	2.4269	21 48 18.6	9.765	9	21 42 24.08	2.1125	12 4 13.5	13.919
10	19 56 7.58	2.4202	21 38 28.9	9.892	10	21 44 30.66	2.1069	11 50 16.9	13.966
11	19 58 32.59	2.4133	21 28 31.6	10.017	11	21 46 36.91	2.1013	11 36 17.6	14.011
12	20 0 57.18	2.4064	21 18 26.9	10.140	12	21 48 42.84	2.0956	11 22 15.6	14.053
13	20 3 21.36	2.3996	21 8 14.8	10.262	13	21 50 48.44	2.0900	11 8 11.2	14.094
14	20 5 45.13	2.3927	20 57 55.5	10.382	14	21 52 53.72	2.0844	10 54 4.3	14.133
15	20 8 8.48	2.3858	20 47 29.0	10.500	15	21 54 58.69	2.0788	10 39 55.0	14.174
16	20 10 31.42	2.3789	20 36 55.5	10.617	16	21 57 3.34	2.0730	10 25 43.4	14.211
17	20 12 53.95	2.3720	20 26 15.0	10.732	17	21 59 7.69	2.0673	10 11 29.7	14.247
18	20 15 16.06	2.3650	20 15 27.7	10.844	18	22 1 11.73	2.0619	9 57 13.8	14.282
19	20 17 37.75	2.3581	20 4 33.7	10.956	19	22 3 15.48	2.0560	9 42 55.9	14.314
20	20 19 59.03	2.3512	19 53 33.0	11.066	20	22 5 18.93	2.0500	9 28 36.1	14.346
21	20 22 19.89	2.3442	19 42 25.8	11.173	21	22 7 22.08	2.0444	9 14 14.4	14.377
22	20 24 40.33	2.3372	19 31 12.2	11.280	22	22 9 24.95	2.0384	8 59 50.9	14.405
23	20 27 0.35	2.3303	19 19 52.2	11.385	23	22 11 27.53	2.0327	8 45 25.8	14.432
24	20 29 19.96	2.3233	S. 19 8 26.0	11.488	24	22 13 29.84	2.0262	S. 8 30 59.1	14.458

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 13.					SUNDAY 15.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
1	22 13 29.84	2.0362	S. 8 30 59.1	14.458	1	23 47 17.12	1.8997	N. 3 9 27.2	14.302
2	22 15 31.87	2.0316	8 16 30.9	14.483	2	23 49 11.07	1.8986	3 23 44.4	14.273
3	22 17 33.63	2.0272	8 2 1.2	14.506	3	23 51 4.95	1.8976	3 37 59.9	14.243
4	22 19 35.13	2.0228	7 47 30.2	14.528	4	23 52 58.78	1.8967	3 52 13.6	14.213
5	22 21 36.36	2.0184	7 32 57.9	14.548	5	23 54 52.55	1.8958	4 6 25.4	14.182
6	22 23 37.34	2.0142	7 18 24.4	14.568	6	23 56 46.27	1.8949	4 20 35.4	14.150
7	22 25 38.06	2.0099	7 3 49.8	14.586	7	23 58 39.94	1.8942	4 34 43.4	14.117
8	22 27 38.53	2.0058	6 49 14.1	14.603	8	0 0 33.57	1.8935	4 48 49.4	14.083
9	22 29 38.75	2.0018	6 34 37.5	14.618	9	0 2 27.16	1.8929	5 2 53.4	14.048
10	22 31 38.74	1.9978	6 20 0.0	14.633	10	0 4 20.72	1.8924	5 16 55.2	14.013
11	22 33 38.49	1.9938	6 5 21.6	14.645	11	0 6 14.25	1.8919	5 30 54.9	13.977
12	22 35 38.00	1.9899	5 50 42.6	14.656	12	0 8 7.75	1.8915	5 44 52.4	13.939
13	22 37 37.28	1.9862	5 36 2.9	14.667	13	0 10 1.23	1.8912	5 58 47.6	13.901
14	22 39 36.34	1.9826	5 21 22.6	14.676	14	0 11 54.69	1.8909	6 12 40.5	13.862
15	22 41 35.19	1.9790	5 6 41.8	14.684	15	0 13 48.14	1.8907	6 26 31.1	13.823
16	22 43 33.82	1.9754	4 52 0.5	14.691	16	0 15 41.58	1.8906	6 40 19.3	13.783
17	22 45 32.24	1.9720	4 37 18.9	14.696	17	0 17 35.01	1.8905	6 54 5.1	13.742
18	22 47 30.46	1.9686	4 22 37.0	14.700	18	0 19 28.44	1.8905	7 7 48.3	13.699
19	22 49 28.47	1.9653	4 7 54.9	14.703	19	0 21 21.87	1.8905	7 21 29.0	13.657
20	22 51 26.29	1.9621	3 53 12.6	14.705	20	0 23 15.30	1.8906	7 35 7.1	13.613
21	22 53 23.92	1.9589	3 38 30.3	14.706	21	0 25 8.74	1.8908	7 48 42.6	13.569
22	22 55 21.36	1.9558	3 23 47.9	14.706	22	0 27 2.20	1.8911	8 2 15.4	13.523
23	22 57 18.61	1.9527	3 9 5.6	14.704	23	0 28 55.67	1.8913	8 15 45.4	13.478
24	22 59 15.68	1.9497	S. 2 54 23.4	14.702	24	0 30 49.16	1.8917	N. 8 29 12.7	13.431
SATURDAY 14.					MONDAY 16.				
0	23 1 12.58	1.9469	S. 2 39 41.3	14.699	0	0 32 42.67	1.8921	N. 8 42 37.1	13.383
1	23 3 9.31	1.9442	2 24 59.5	14.693	1	0 34 36.21	1.8927	8 55 58.7	13.335
2	23 5 5.88	1.9414	2 10 18.1	14.688	2	0 36 29.79	1.8932	9 9 17.3	13.286
3	23 7 2.28	1.9388	1 55 37.0	14.682	3	0 38 23.40	1.8938	9 22 33.0	13.236
4	23 8 58.53	1.9362	1 40 56.3	14.673	4	0 40 17.05	1.8945	9 35 45.6	13.185
5	23 10 54.62	1.9336	1 26 16.2	14.663	5	0 42 10.74	1.8953	9 48 55.2	13.134
6	23 12 50.56	1.9312	1 11 36.7	14.653	6	0 44 4.48	1.8961	10 2 1.7	13.083
7	23 14 46.36	1.9288	0 56 57.8	14.642	7	0 45 58.27	1.8969	10 15 5.1	13.030
8	23 16 42.02	1.9266	0 42 19.6	14.631	8	0 47 52.11	1.8978	10 28 5.3	12.976
9	23 18 37.55	1.9243	0 27 42.1	14.618	9	0 49 46.01	1.8988	10 41 2.2	12.922
10	23 20 32.94	1.9222	S. 0 13 5.5	14.603	10	0 51 39.97	1.8998	10 53 55.9	12.867
11	23 22 28.21	1.9201	N. 0 1 30.2	14.588	11	0 53 33.99	1.9009	11 6 46.2	12.810
12	23 24 23.35	1.9181	0 16 5.0	14.572	12	0 55 28.08	1.9021	11 19 33.1	12.754
13	23 26 18.38	1.9162	0 30 38.8	14.554	13	0 57 22.24	1.9033	11 32 16.7	12.697
14	23 28 13.29	1.9143	0 45 11.5	14.536	14	0 59 16.47	1.9045	11 44 56.8	12.639
15	23 30 8.10	1.9126	0 59 43.1	14.517	15	1 1 10.78	1.9058	11 57 33.4	12.581
16	23 32 2.80	1.9108	1 14 13.5	14.496	16	1 3 5.17	1.9072	12 10 6.5	12.522
17	23 33 57.40	1.9092	1 28 42.6	14.475	17	1 4 59.64	1.9086	12 22 36.0	12.462
18	23 35 51.90	1.9076	1 43 10.5	14.453	18	1 6 54.20	1.9101	12 35 1.9	12.401
19	23 37 46.31	1.9061	1 57 37.0	14.430	19	1 8 48.85	1.9116	12 47 24.1	12.339
20	23 39 40.63	1.9047	2 12 2.1	14.406	20	1 10 43.59	1.9132	12 59 42.6	12.277
21	23 41 34.87	1.9033	2 26 25.7	14.381	21	1 12 38.43	1.9148	13 11 57.4	12.215
22	23 43 29.03	1.9020	2 40 47.8	14.355	22	1 14 33.37	1.9165	13 24 8.4	12.152
23	23 45 23.11	1.9008	2 55 8.3	14.328	23	1 16 28.41	1.9182	13 36 15.6	12.087
24	23 47 17.12	1.8997	N. 3 9 27.2	14.301	24	1 18 23.56	1.9200	N. 13 48 18.8	12.022

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 17.					THURSDAY 19.				
0	1 18 23.56	1.9200	N. 13 48 18.8	12.022	0	2 53 25.11	2.0520	N. 21 57 30.9	8.102
1	1 20 18.81	1.9218	14 0 18.2	11.957	1	2 55 28.33	2.0553	22 5 34.1	8.004
2	1 22 14.18	1.9237	14 12 13.6	11.890	2	2 57 31.75	2.0587	22 13 31.4	7.905
3	1 24 9.66	1.9257	14 24 5.0	11.823	3	2 59 35.37	2.0621	22 21 22.7	7.806
4	1 26 5.26	1.9277	14 35 52.3	11.755	4	3 1 39.20	2.0655	22 29 8.1	7.706
5	1 28 0.98	1.9298	14 47 35.6	11.687	5	3 3 43.23	2.0688	22 36 47.4	7.605
6	1 29 56.83	1.9318	14 59 14.7	11.618	6	3 5 47.46	2.0722	22 44 20.7	7.504
7	1 31 52.80	1.9339	15 10 49.7	11.548	7	3 7 51.90	2.0757	22 51 47.9	7.403
8	1 33 48.90	1.9361	15 22 20.5	11.478	8	3 9 56.54	2.0791	22 59 9.0	7.300
9	1 35 45.13	1.9383	15 33 47.0	11.406	9	3 12 1.39	2.0825	23 6 23.9	7.196
10	1 37 41.49	1.9406	15 45 9.2	11.334	10	3 14 6.44	2.0858	23 13 32.5	7.092
11	1 39 38.00	1.9429	15 56 27.1	11.262	11	3 16 11.69	2.0892	23 20 34.9	6.988
12	1 41 34.64	1.9452	16 7 40.6	11.188	12	3 18 17.15	2.0927	23 27 31.0	6.883
13	1 43 31.42	1.9476	16 18 49.7	11.114	13	3 20 22.81	2.0961	23 34 20.8	6.777
14	1 45 28.35	1.9501	16 29 54.3	11.040	14	3 22 28.68	2.0995	23 41 4.2	6.670
15	1 47 25.43	1.9526	16 40 54.5	10.965	15	3 24 34.75	2.1028	23 47 41.2	6.563
16	1 49 22.66	1.9551	16 51 50.1	10.888	16	3 26 41.02	2.1063	23 54 11.8	6.456
17	1 51 20.04	1.9576	17 2 41.1	10.812	17	3 28 47.50	2.1097	24 0 35.9	6.348
18	1 53 17.57	1.9602	17 13 27.5	10.734	18	3 30 54.18	2.1130	24 6 53.5	6.239
19	1 55 15.26	1.9628	17 24 9.2	10.657	19	3 33 1.06	2.1163	24 13 4.6	6.130
20	1 57 13.11	1.9655	17 34 46.3	10.578	20	3 35 8.13	2.1196	24 19 9.1	6.020
21	1 59 11.12	1.9682	17 45 18.6	10.498	21	3 37 15.41	2.1230	24 25 6.9	5.908
22	2 1 9.29	1.9709	17 55 46.1	10.418	22	3 39 22.89	2.1263	24 30 58.0	5.797
23	2 3 7.63	1.9737	N. 18 6 8.8	10.337	23	3 41 30.56	2.1295	N. 24 36 42.5	5.685
WEDNESDAY 18.					FRIDAY 20.				
0	2 5 6.14	1.9766	N. 18 16 26.6	10.256	0	3 43 38.43	2.1328	N. 24 42 20.2	5.573
1	2 7 4.82	1.9794	18 26 39.5	10.174	1	3 45 46.49	2.1360	24 47 51.2	5.459
2	2 9 3.67	1.9823	18 36 47.5	10.092	2	3 47 54.75	2.1393	24 53 15.3	5.345
3	2 11 2.69	1.9852	18 46 50.5	10.008	3	3 50 3.20	2.1425	24 58 32.6	5.231
4	2 13 1.89	1.9881	18 56 48.4	9.923	4	3 52 11.85	2.1457	25 3 43.0	5.116
5	2 15 1.26	1.9910	19 6 41.3	9.839	5	3 54 20.68	2.1488	25 8 46.5	5.001
6	2 17 0.81	1.9941	19 16 29.1	9.753	6	3 56 29.70	2.1519	25 13 43.1	4.885
7	2 19 0.55	1.9972	19 26 11.7	9.668	7	3 58 38.91	2.1551	25 18 32.7	4.768
8	2 21 0.47	2.0004	19 35 49.2	9.582	8	4 0 48.31	2.1582	25 23 15.3	4.651
9	2 23 0.57	2.0033	19 45 21.5	9.494	9	4 2 57.89	2.1612	25 27 50.8	4.533
10	2 25 0.86	2.0063	19 54 48.5	9.406	10	4 5 7.65	2.1642	25 32 19.3	4.415
11	2 27 1.33	2.0094	20 4 10.2	9.317	11	4 7 17.59	2.1672	25 36 40.6	4.296
12	2 29 1.99	2.0126	20 13 26.5	9.227	12	4 9 27.71	2.1702	25 40 54.8	4.177
13	2 31 2.84	2.0158	20 22 37.4	9.137	13	4 11 38.01	2.1731	25 45 1.8	4.057
14	2 33 3.88	2.0190	20 31 42.9	9.047	14	4 13 48.48	2.1759	25 49 1.6	3.937
15	2 35 5.12	2.0223	20 40 43.0	8.955	15	4 15 59.12	2.1788	25 52 54.2	3.816
16	2 37 6.55	2.0255	20 49 37.5	8.863	16	4 18 9.93	2.1816	25 56 39.5	3.694
17	2 39 8.18	2.0288	20 58 26.5	8.770	17	4 20 20.91	2.1843	26 0 17.5	3.572
18	2 41 10.00	2.0320	21 7 9.9	8.677	18	4 22 32.05	2.1871	26 3 48.2	3.450
19	2 43 12.02	2.0353	21 15 47.7	8.583	19	4 24 43.36	2.1898	26 7 11.5	3.327
20	2 45 14.24	2.0386	21 24 19.9	8.488	20	4 26 54.83	2.1925	26 10 27.4	3.203
21	2 47 16.65	2.0419	21 32 46.3	8.392	21	4 29 6.46	2.1951	26 13 35.9	3.080
22	2 49 19.27	2.0453	21 41 7.0	8.296	22	4 31 18.24	2.1976	26 16 37.0	2.956
23	2 51 22.09	2.0487	21 49 21.8	8.199	23	4 33 30.17	2.2001	26 19 30.6	2.831
24	2 53 25.11	2.0520	N. 21 57 30.9	8.102	24	4 35 42.25	2.2026	N. 26 22 16.7	2.706

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 21.					MONDAY 23.				
0	h m s	s	N. 26 22 16.7	2.706	0	h m s	s	N. 26 1 47.7	3.628
1	4 35 42.25	2.2026	26 24 55.3	2.580	1	6 23 12.37	2.2528	25 58 6.0	3.762
2	4 37 54.48	2.2030	26 27 26.3	2.454	2	6 25 27.52	2.2523	25 54 16.3	3.896
3	4 40 6.85	2.2074	26 29 49.8	2.328	3	6 27 42.64	2.2518	25 50 18.5	4.030
4	4 42 19.37	2.2098	26 32 5.6	2.200	4	6 29 57.73	2.2512	25 46 12.7	4.163
5	4 44 34.02	2.2120	26 34 13.8	2.073	5	6 32 12.78	2.2504	25 41 59.0	4.296
6	4 46 44.81	2.2142	26 36 14.4	1.946	6	6 34 27.78	2.2497	25 37 37.3	4.428
7	4 48 57.73	2.2164	26 38 7.3	1.817	7	6 36 42.74	2.2489	25 33 7.6	4.561
8	4 51 10.78	2.2185	26 39 52.4	1.688	8	6 38 57.65	2.2480	25 28 30.0	4.693
9	4 53 23.95	2.2205	26 41 29.9	1.560	9	6 41 12.50	2.2471	25 23 44.4	4.826
10	4 55 37.24	2.2225	26 42 59.6	1.431	10	6 43 27.30	2.2462	25 18 50.9	4.958
11	4 57 50.65	2.2245	26 44 21.6	1.302	11	6 45 42.04	2.2452	25 13 49.5	5.090
12	5 0 4.18	2.2262	26 45 35.8	1.172	12	6 47 56.72	2.2440	25 8 40.1	5.222
13	5 2 17.82	2.2282	26 46 42.2	1.042	13	6 50 11.32	2.2428	25 3 22.9	5.352
14	5 4 31.57	2.2300	26 47 40.8	0.911	14	6 52 25.86	2.2417	24 57 57.9	5.483
15	5 6 45.42	2.2318	26 48 31.5	0.780	15	6 54 40.33	2.2405	24 52 25.0	5.613
16	5 8 59.38	2.2335	26 49 14.4	0.649	16	6 56 54.72	2.2393	24 46 44.3	5.743
17	5 11 13.44	2.2351	26 49 49.4	0.518	17	6 59 9.04	2.2379	24 40 55.8	5.873
18	5 13 27.59	2.2365	26 50 16.5	0.386	18	7 1 23.27	2.2365	24 34 59.5	6.003
19	5 15 41.83	2.2380	26 50 35.7	0.254	19	7 3 37.42	2.2351	24 28 55.5	6.132
20	5 17 56.15	2.2394	26 50 47.0	+ 0.123	20	7 5 51.48	2.2335	24 22 43.7	6.261
21	5 20 10.56	2.2408	26 50 50.4	- 0.010	21	7 8 5.44	2.2320	24 16 24.2	6.388
22	5 22 25.05	2.2422	26 50 45.8	0.143	22	7 10 19.32	2.2305	24 9 57.1	6.516
23	5 24 39.62	2.2434	26 50 33.2	0.276	23	7 12 33.10	2.2288	N. 24 3 22.3	6.644
24	5 26 54.26	2.2446				7 14 46.78	2.2272		
SUNDAY 22.					TUESDAY 24.				
0	h m s	s	N. 26 50 12.7	0.408	0	h m s	s	N. 23 56 39.8	6.772
1	5 29 8.97	2.2457	26 49 44.2	0.542	1	7 17 0.36	2.2255	23 49 49.7	6.898
2	5 31 23.74	2.2468	26 49 7.7	0.676	2	7 19 13.84	2.2238	23 42 52.1	7.023
3	5 33 38.58	2.2476	26 48 23.1	0.810	3	7 21 27.21	2.2220	23 35 47.0	7.148
4	5 35 53.47	2.2486	26 47 30.5	0.943	4	7 23 40.48	2.2202	23 28 34.3	7.274
5	5 38 8.41	2.2494	26 46 29.9	1.077	5	7 25 53.63	2.2183	23 21 14.1	7.399
6	5 40 23.40	2.2502	26 45 21.3	1.211	6	7 28 6.68	2.2165	23 13 46.4	7.523
7	5 42 38.44	2.2510	26 44 4.6	1.345	7	7 30 19.61	2.2145	23 6 11.4	7.646
8	5 44 53.52	2.2517	26 42 39.9	1.479	8	7 32 32.42	2.2126	22 58 28.9	7.769
9	5 47 8.64	2.2523	26 41 7.1	1.613	9	7 34 45.12	2.2107	22 50 39.1	7.891
10	5 49 23.79	2.2528	26 39 26.3	1.748	10	7 36 57.70	2.2086	22 42 42.0	8.013
11	5 51 38.97	2.2532	26 37 37.4	1.883	11	7 39 10.15	2.2065	22 34 37.6	8.134
12	5 53 54.18	2.2536	26 35 40.4	2.017	12	7 41 22.48	2.2043	22 26 25.9	8.255
13	5 56 9.40	2.2538	26 33 35.4	2.151	13	7 43 34.69	2.2024	22 18 7.0	8.375
14	5 58 24.64	2.2542	26 31 22.3	2.286	14	7 45 46.77	2.2003	22 9 40.9	8.494
15	6 0 39.90	2.2544	26 29 1.1	2.421	15	7 47 58.73	2.1982	22 1 7.7	8.613
16	6 2 55.17	2.2545	26 26 31.8	2.555	16	7 50 10.55	2.1960	21 52 27.3	8.732
17	6 5 10.44	2.2546	26 23 54.5	2.689	17	7 52 22.25	2.1938	21 43 39.9	8.848
18	6 7 25.72	2.2546	26 21 9.1	2.823	18	7 54 33.81	2.1916	21 34 45.5	8.966
19	6 9 40.99	2.2545	26 18 15.7	2.958	19	7 56 45.24	2.1894	21 25 44.0	9.083
20	6 11 56.26	2.2544	26 15 14.2	3.093	20	7 58 56.54	2.1872	21 16 35.6	9.198
21	6 14 11.52	2.2542	26 12 4.6	3.227	21	8 1 7.70	2.1849	21 7 20.3	9.312
22	6 16 26.76	2.2539	26 8 47.0	3.360	22	8 3 18.73	2.1827	20 57 58.2	9.426
23	6 18 41.99	2.2536	26 5 21.4	3.494	23	8 5 29.62	2.1803	20 48 29.2	9.539
24	6 20 57.19	2.2532	N. 26 1 47.7	3.628	24	8 7 40.37	2.1780	N. 20 38 53.5	9.652
	6 23 12.37	2.2528				8 9 50.98	2.1757		

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 25.					FRIDAY 27.				
0	8 9 50.98	2.1737	N. 20 38 53.5	9.638	0	9 51 45.21	2.0783	N. 11 2 2.2	14.083
1	8 12 1.46	2.1735	20 29 11.0	9.764	1	9 53 49.87	2.0771	10 47 59.3	14.081
2	8 14 11.80	2.1712	20 19 21.8	9.876	2	9 55 54.46	2.0759	10 33 52.5	14.146
3	8 16 22.00	2.1688	20 9 26.0	9.985	3	9 57 58.98	2.0747	10 19 41.8	14.209
4	8 18 32.06	2.1665	19 59 23.6	10.095	4	10 0 3.42	2.0735	10 5 27.4	14.271
5	8 20 41.98	2.1642	19 49 14.6	10.204	5	10 2 7.80	2.0725	9 51 9.3	14.332
6	8 22 51.76	2.1618	19 38 59.1	10.312	6	10 4 12.12	2.0714	9 36 47.6	14.392
7	8 25 1.40	2.1595	19 28 37.2	10.418	7	10 6 16.37	2.0704	9 22 22.3	14.451
8	8 27 10.90	2.1571	19 18 8.9	10.525	8	10 8 20.57	2.0695	9 7 53.5	14.508
9	8 29 20.25	2.1548	19 7 34.2	10.631	9	10 10 24.71	2.0686	8 53 21.3	14.565
10	8 31 29.47	2.1525	18 56 53.2	10.736	10	10 12 28.80	2.0677	8 38 45.7	14.620
11	8 33 38.55	2.1501	18 46 5.9	10.839	11	10 14 32.84	2.0669	8 24 6.9	14.673
12	8 35 47.48	2.1478	18 35 12.5	10.942	12	10 16 36.83	2.0662	8 9 24.9	14.726
13	8 37 56.28	2.1455	18 24 12.9	11.044	13	10 18 40.78	2.0656	7 54 39.8	14.778
14	8 40 4.94	2.1432	18 13 7.2	11.146	14	10 20 44.70	2.0650	7 39 51.6	14.828
15	8 42 13.46	2.1409	18 1 55.4	11.247	15	10 22 48.58	2.0643	7 25 0.4	14.877
16	8 44 21.85	2.1387	17 50 37.6	11.347	16	10 24 52.42	2.0638	7 10 6.3	14.925
17	8 46 30.10	2.1364	17 39 13.8	11.445	17	10 26 56.24	2.0634	6 55 9.4	14.972
18	8 48 38.22	2.1342	17 27 44.2	11.543	18	10 29 0.03	2.0630	6 40 9.7	15.017
19	8 50 46.20	2.1318	17 16 8.7	11.639	19	10 31 3.80	2.0627	6 25 7.4	15.060
20	8 52 54.04	2.1296	17 4 27.5	11.735	20	10 33 7.56	2.0625	6 10 2.5	15.103
21	8 55 1.75	2.1274	16 52 40.5	11.831	21	10 35 11.30	2.0623	5 54 55.0	15.145
22	8 57 9.33	2.1253	16 40 47.8	11.925	22	10 37 15.03	2.0621	5 39 45.1	15.186
23	8 59 16.78	2.1232	N. 16 28 49.5	12.018	23	10 39 18.75	2.0620	N. 5 24 32.8	15.224
THURSDAY 26.					SATURDAY 28.				
0	9 1 24.11	2.1210	N. 16 16 45.7	12.109	0	10 41 22.47	2.0620	N. 5 9 18.2	15.262
1	9 3 31.30	2.1188	16 4 36.4	12.201	1	10 43 26.19	2.0620	4 54 1.4	15.298
2	9 5 38.37	2.1167	15 52 21.6	12.292	2	10 45 29.91	2.0622	4 38 42.5	15.333
3	9 7 45.31	2.1147	15 40 1.4	12.381	3	10 47 33.65	2.0623	4 23 21.5	15.366
4	9 9 52.13	2.1126	15 27 35.9	12.468	4	10 49 37.39	2.0625	4 7 58.6	15.398
5	9 11 58.82	2.1106	15 15 5.2	12.556	5	10 51 41.15	2.0628	3 52 33.8	15.429
6	9 14 5.40	2.1086	15 2 29.2	12.643	6	10 53 44.93	2.0632	3 37 7.1	15.459
7	9 16 11.85	2.1065	14 49 48.0	12.728	7	10 55 48.73	2.0635	3 21 38.7	15.488
8	9 18 18.18	2.1046	14 37 1.8	12.812	8	10 57 52.55	2.0640	3 6 8.6	15.514
9	9 20 24.40	2.1027	14 24 10.6	12.895	9	10 59 56.41	2.0647	2 50 37.0	15.540
10	9 22 30.51	2.1008	14 11 14.4	12.977	10	11 2 0.31	2.0653	2 35 3.8	15.565
11	9 24 36.50	2.0989	13 58 13.3	13.059	11	11 4 4.24	2.0659	2 19 29.2	15.588
12	9 26 42.38	2.0972	13 45 7.3	13.139	12	11 6 8.22	2.0667	2 3 53.3	15.609
13	9 28 48.16	2.0954	13 31 56.6	13.218	13	11 8 12.24	2.0675	1 48 16.1	15.629
14	9 30 53.83	2.0936	13 18 41.1	13.297	14	11 10 16.32	2.0684	1 32 37.8	15.648
15	9 32 59.39	2.0919	13 5 21.0	13.375	15	11 12 20.45	2.0693	1 16 58.3	15.666
16	9 35 4.86	2.0903	12 51 56.4	13.448	16	11 14 24.64	2.0703	1 1 17.9	15.682
17	9 37 10.23	2.0887	12 38 27.2	13.523	17	11 16 28.89	2.0714	0 45 36.5	15.697
18	9 39 15.50	2.0870	12 24 53.6	13.597	18	11 18 33.21	2.0726	0 29 54.3	15.709
19	9 41 20.67	2.0854	12 11 15.6	13.669	19	11 20 37.60	2.0738	N. 0 14 11.4	15.721
20	9 43 25.75	2.0839	11 57 33.3	13.741	20	11 22 42.07	2.0752	S. 0 1 32.2	15.732
21	9 45 30.74	2.0825	11 43 46.7	13.811	21	11 24 46.62	2.0766	0 17 16.4	15.741
22	9 47 35.65	2.0811	11 29 56.0	13.880	22	11 26 51.26	2.0780	0 33 1.1	15.748
23	9 49 40.47	2.0797	11 16 1.1	13.948	23	11 28 55.98	2.0794	0 48 46.2	15.753
24	9 51 45.21	2.0783	N. 11 2 2.2	14.015	24	11 31 0.79	2.0820	S. 1 4 31.5	15.758

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 29.					TUESDAY 31.				
0	11 31 0.79	2.0810	S. 1 4 31.5	15.758	0	13 14 3.02	2.2376	S. 13 17 42.5	14.189
1	11 33 5.70	2.0827	1 20 17.1	15.762	1	13 16 17.43	2.2426	13 31 51.7	14.117
2	11 35 10.71	2.0844	1 36 2.9	15.764	2	13 18 32.13	2.2474	13 45 56.6	14.044
3	11 37 15.83	2.0862	1 51 48.8	15.764	3	13 20 47.12	2.2523	13 59 57.0	13.969
4	11 39 21.06	2.0881	2 7 34.6	15.763	4	13 23 2.41	2.2573	14 13 52.9	13.893
5	11 41 26.40	2.0900	2 23 20.3	15.760	5	13 25 18.00	2.2623	14 27 44.1	13.814
6	11 43 31.86	2.0921	2 39 5.8	15.756	6	13 27 33.88	2.2673	14 41 30.6	13.734
7	11 45 37.45	2.0942	2 54 51.0	15.750	7	13 29 50.07	2.2724	14 55 12.2	13.653
8	11 47 43.16	2.0963	3 10 35.8	15.743	8	13 32 6.57	2.2775	15 8 48.9	13.569
9	11 49 49.00	2.0984	3 26 20.2	15.735	9	13 34 23.37	2.2827	15 22 20.5	13.484
10	11 51 54.97	2.1007	3 42 4.0	15.725	10	13 36 40.49	2.2879	15 35 47.0	13.398
11	11 54 1.08	2.1031	3 57 47.2	15.713	11	13 38 57.92	2.2931	15 49 8.2	13.309
12	11 56 7.34	2.1055	4 13 29.6	15.700	12	13 41 15.66	2.2983	16 2 24.1	13.220
13	11 58 13.74	2.1080	4 29 11.2	15.686	13	13 43 33.72	2.3036	16 15 34.5	13.127
14	12 0 20.30	2.1107	4 44 51.9	15.670	14	13 45 52.09	2.3089	16 28 39.3	13.033
15	12 2 27.02	2.1133	5 0 31.6	15.653	15	13 48 10.79	2.3143	16 41 38.5	12.939
16	12 4 33.89	2.1159	5 16 10.2	15.633	16	13 50 29.81	2.3197	16 54 32.0	12.844
17	12 6 40.93	2.1187	5 31 47.6	15.612	17	13 52 49.15	2.3251	17 7 19.6	12.748
18	12 8 48.14	2.1216	5 47 23.7	15.590	18	13 55 8.82	2.3306	17 20 1.3	12.644
19	12 10 55.52	2.1244	6 2 58.4	15.566	19	13 57 28.82	2.3361	17 32 36.9	12.543
20	12 13 3.07	2.1274	6 18 31.6	15.541	20	13 59 49.15	2.3415	17 45 6.4	12.440
21	12 15 10.81	2.1306	6 34 3.3	15.514	21	14 2 9.80	2.3469	17 57 29.7	12.335
22	12 17 18.74	2.1337	6 49 33.3	15.486	22	14 4 30.78	2.3523	18 9 46.6	12.228
23	12 19 26.85	2.1368	S. 7 5 1.6	15.457	23	14 6 52.10	2.3578	S. 18 21 57.1	12.120
MONDAY 30.					WEDNESDAY, SEPTEMBER 1.				
0	12 21 35.16	2.1408	S. 7 20 28.1	15.425	0	14 9 13.76	2.3637	S. 18 34 1.0	12.019
1	12 23 43.67	2.1435	7 35 52.6	15.392	PHASES OF THE MOON.				
2	12 25 52.38	2.1468	7 51 15.1	15.358					
3	12 28 1.29	2.1502	8 6 35.5	15.322					
4	12 30 10.41	2.1538	8 21 53.7	15.285					
5	12 32 19.75	2.1575	8 37 9.5	15.243	<div> <div>d h m</div> <div> ☾ First Quarter . . . Aug. 5 6 24.4 ○ Full Moon 12 2 22.6 ☾ Last Quarter 19 20 29.3 ● New Moon 27 15 29.1 </div> </div>				
6	12 34 29.31	2.1612	8 52 22.9	15.202					
7	12 36 39.09	2.1649	9 7 33.8	15.160					
8	12 38 49.10	2.1687	9 22 42.1	15.117					
9	12 40 59.34	2.1726	9 37 47.8	15.071	<div> <div>d h</div> <div> ☾ Perigee Aug. 7 8.9 ☾ Apogee 19 21.8 </div> </div>				
10	12 43 9.81	2.1765	9 52 50.6	15.023					
11	12 45 20.52	2.1805	10 7 50.6	14.974					
12	12 47 31.47	2.1846	10 22 47.5	14.923					
13	12 49 42.67	2.1887	10 37 41.4	14.872					
14	12 51 54.11	2.1928	10 52 32.1	14.818					
15	12 54 5.81	2.1971	11 7 19.5	14.762					
16	12 56 17.76	2.2013	11 22 3.5	14.704					
17	12 58 29.97	2.2057	11 36 44.0	14.646					
18	13 0 42.45	2.2102	11 51 21.0	14.586					
19	13 2 55.19	2.2146	12 5 54.3	14.524					
20	13 5 8.20	2.2192	12 20 23.9	14.461					
21	13 7 21.49	2.2238	12 34 49.6	14.395					
22	13 9 35.05	2.2284	12 49 11.3	14.328					
23	13 11 48.90	2.2331	13 3 29.0	14.260					
24	13 14 3.02	2.2376	S. 13 17 42.5	14.189					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
1	SUN W.	34 50 12	2798	36 24 43	2789	37 59 25	2782	39 34 17	2774
	Spica E.	38 15 17	2498	36 34 1	2492	34 52 36	2486	33 11 3	2480
	SATURN E.	70 10 5	2521	68 29 21	2514	66 48 27	2508	65 7 25	2502
	Antares E.	83 58 14	2481	82 16 34	2473	80 34 43	2466	78 52 42	2459
2	SUN W.	47 31 7	2737	49 6 58	2730	50 42 58	2722	52 19 8	2716
	SATURN E.	56 40 13	2475	54 58 25	2471	53 16 31	2467	51 34 31	2463
	Antares E.	70 20 6	2424	68 37 5	2418	66 53 56	2411	65 10 37	2405
3	SUN W.	60 22 5	2684	61 59 6	2679	63 36 14	2673	65 13 30	2667
	JUPITER W.	30 2 45	2481	31 44 25	2472	33 26 17	2463	35 8 22	2455
	MARS W.	26 15 27	2632	27 53 38	2621	29 32 5	2610	31 10 46	2601
	Antares E.	56 31 54	2376	54 47 45	2370	53 3 27	2364	51 19 1	2359
	α Aquilæ E.	108 40 26	3062	107 11 30	3044	105 42 12	3027	104 12 33	3011
4	SUN W.	73 21 44	2640	74 59 44	2635	76 37 51	2630	78 16 5	2626
	JUPITER W.	43 41 30	2419	45 24 37	2414	47 7 52	2408	48 51 16	2403
	MARS W.	39 27 12	2561	41 7 1	2554	42 46 59	2548	44 27 6	2542
	Antares E.	42 35 0	2334	40 49 50	2329	39 4 33	2325	37 19 10	2320
	α Aquilæ E.	96 39 59	2954	95 8 48	2945	93 37 26	2938	92 5 55	2932
5	SUN W.	86 28 48	2603	88 7 39	2599	89 46 35	2595	91 25 37	2591
	JUPITER W.	57 30 8	2378	59 14 15	2373	60 58 29	2368	62 42 49	2364
	MARS W.	52 49 39	2515	54 30 31	2510	56 11 30	2506	57 52 35	2501
	α Aquilæ E.	84 26 57	2919	82 55 2	2920	81 23 9	2923	79 51 19	2926
	Fomalhaut E.	108 59 12	2716	107 22 53	2704	105 46 19	2693	104 9 30	2684
6	SUN W.	99 42 2	2574	101 21 33	2572	103 1 7	2569	104 40 45	2566
	JUPITER W.	71 25 51	2347	73 10 42	2344	74 55 38	2341	76 40 38	2338
	MARS W.	66 19 28	2482	68 1 6	2480	69 42 48	2477	71 24 34	2474
	Spica W.	31 37 20	2294	33 23 28	2289	35 9 44	2285	36 56 6	2281
	α Aquilæ E.	72 13 47	2964	70 42 49	2977	69 12 7	2971	67 41 43	2968
	Fomalhaut E.	96 2 32	2648	94 24 42	2643	92 46 46	2639	91 8 44	2637
7	SUN W.	112 59 43	2556	114 39 38	2555	116 19 35	2553	117 59 34	2553
	JUPITER W.	85 26 27	2328	87 11 45	2328	88 57 4	2326	90 42 25	2326
	MARS W.	79 54 16	2463	81 36 21	2462	83 18 27	2461	85 0 35	2460
	Spica W.	45 49 10	2266	47 35 59	2265	49 22 50	2263	51 9 44	2262
	α Aquilæ E.	60 15 46	3125	58 48 7	3158	57 21 8	3194	55 54 52	3235
	Fomalhaut E.	82 58 2	2635	81 19 54	2638	79 41 50	2641	78 3 51	2645
	α Pegasi E.	104 30 13	2427	102 47 17	2424	101 4 16	2421	99 21 11	2418
8	MARS W.	93 31 24	2460	95 13 33	2461	96 55 41	2462	98 37 47	2465
	Spica W.	60 4 32	2260	61 51 30	2260	63 38 28	2261	65 25 25	2262
	Fomalhaut E.	69 55 50	2684	68 18 48	2695	66 42 2	2709	65 5 34	2723
	α Pegasi E.	90 45 7	2414	89 1 52	2415	87 18 39	2417	85 35 28	2419
9	Spica W.	74 19 33	2275	76 6 12	2277	77 52 46	2280	79 39 15	2283
	SATURN W.	42 48 24	2342	44 33 22	2341	46 18 22	2341	48 3 22	2342
	Antares W.	28 28 53	2266	30 15 42	2270	32 2 26	2274	33 49 4	2277
	Fomalhaut E.	57 8 54	2826	55 35 0	2854	54 1 42	2884	52 29 3	2919
	α Pegasi E.	77 0 36	2439	75 17 57	2445	73 35 27	2453	71 53 7	2460

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1	SUN W. Spica E. SATURN E. Antares E.	. . . 41 9 19 31 29 22 63 26 14 77 10 31	2766 2473 2496 2431	. . . 42 44 32 29 47 34 61 44 55 75 28 9	2759 2472 2490 2445	. . . 44 19 54 28 5 41 60 3 28 73 45 38	2751 2468 2485 2438	. . . 45 55 26 26 23 43 58 21 54 72 2 57	2744 2465 2480 2431
2	SUN W. SATURN E. Antares E.	53 55 26 49 52 26 63 27 10	2710 2460 2399	55 31 53 48 10 16 61 43 34	2703 2458 2393	57 8 29 46 28 3 59 59 49	2697 2455 2387	58 45 13 44 45 47 58 15 56	2691 2453 2381
3	SUN W. JUPITER W. MARS W. Antares E. α Aquilæ E.	66 50 54 36 50 38 32 49 40 49 34 28 102 42 34	2661 2447 2592 2334 2997	68 28 26 38 33 6 34 28 46 47 49 47 101 12 18	2656 2440 2583 2349 2995	70 6 5 40 15 44 36 8 4 46 4 59 99 41 46	2651 2433 2573 2344 2973	71 43 51 41 58 32 37 47 33 44 20 3 98 10 59	2646 2426 2568 2339 2962
4	SUN W. JUPITER W. MARS W. Antares E. α Aquilæ E.	79 54 25 50 34 47 46 7 21 35 33 40 90 34 17	2621 2397 2536 2316 2927	81 32 51 52 18 26 47 47 44 33 48 4 89 2 33	2616 2391 2530 2311 2924	83 11 24 54 2 13 49 28 15 32 2 21 87 30 44	2612 2387 2525 2307 2920	84 50 3 55 46 7 51 8 53 30 16 32 85 58 51	2607 2382 2520 2303 2920
5	SUN W. JUPITER W. MARS W. α Aquilæ E. Fomalhaut E.	93 4 44 64 27 15 59 33 47 78 19 33 102 32 28	2587 2361 2497 2931 2675	94 43 57 66 11 46 61 15 4 76 47 53 100 55 14	2584 2357 2493 2987 2666	96 23 14 67 56 23 62 56 27 75 16 21 99 17 49	2580 2353 2489 2944 2660	98 2 36 69 41 5 64 37 55 73 44 58 97 40 15	2577 2350 2486 2954 2653
6	SUN W. JUPITER W. MARS W. Spica W. α Aquilæ E. Fomalhaut E.	106 20 27 78 25 42 73 6 24 38 42 34 66 11 40 89 30 39	2564 2336 2472 2277 3026 2635	108 0 12 80 10 49 74 48 17 40 29 7 64 41 59 87 52 31	2561 2334 2469 2274 3047 2633	109 40 0 81 55 59 76 30 14 42 15 44 63 12 45 86 14 21	2560 2338 2467 2272 3071 2633	111 19 50 83 41 12 78 12 14 44 2 25 61 44 0 84 36 11	2558 2331 2465 2269 3096 2634
7	SUN W. JUPITER W. MARS W. Spica W. α Aquilæ E. Fomalhaut E. α Pegasi E.	119 39 33 92 27 47 86 42 44 52 56 39 54 29 24 76 25 57 97 38 2	2553 2325 2460 2261 3279 2651 2417	121 19 33 94 13 10 88 24 54 54 43 36 53 4 48 74 48 11 95 54 51	2552 2325 2460 2260 3329 2657 2415	122 59 34 95 58 33 90 7 4 56 30 34 51 41 10 73 10 33 94 11 37	2552 2325 2460 2260 3384 2663 2414	124 39 35 97 43 56 91 49 14 58 17 33 50 18 35 71 33 6 92 28 22	2553 2326 2460 2260 3445 2673 2414
8	MARS W. Spica W. Fomalhaut E. α Pegasi E.	100 19 50 67 12 20 63 29 25 83 52 20	2466 2264 2740 2421	102 1 51 68 59 13 61 53 38 82 9 15	2469 2266 2759 2425	103 43 48 70 46 3 60 18 16 80 26 16	2471 2268 2779 2429	105 25 42 72 32 50 58 43 20 78 43 23	2475 2270 2801 2433
9	Spica W. SATURN W. Antares W. Fomalhaut E. α Pegasi E.	81 25 39 49 48 21 35 35 37 50 57 8 70 10 57	2288 2343 2282 2956 2469	83 11 56 51 33 18 37 22 3 49 26 0 68 29 0	2292 2345 2286 2997 2477	84 58 7 53 18 12 39 8 23 47 55 44 66 47 15	2298 2348 2291 3043 2487	86 44 10 55 3 2 40 54 35 46 26 25 65 5 44	2303 2351 2296 3095 2499

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Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
10	Spica W.	88 30 5	2309	90 15 52	2315	92 1 30	2321	93 46 59	2328
	SATURN W.	56 47 47	2355	58 32 26	2359	60 16 59	2364	62 1 25	2370
	Antares W.	42 40 40	2302	44 26 36	2309	46 12 23	2315	47 58 1	2322
	α Pegasi E.	63 24 29	2311	61 43 31	2324	60 2 51	2338	58 22 31	2354
	α Arietis E.	105 16 45	2318	103 31 12	2324	101 45 47	2331	100 0 32	2337
11	SATURN W.	70 41 21	2405	72 24 49	2413	74 8 5	2422	75 51 8	2431
	Antares W.	56 43 30	2362	58 28 0	2371	60 12 17	2380	61 56 21	2389
	α Pegasi E.	50 6 49	2353	48 29 6	2378	46 51 56	2705	45 15 23	2735
	α Arietis E.	91 16 50	2376	89 32 41	2384	87 48 44	2394	86 5 1	2404
12	SATURN W.	84 23 2	2422	86 4 41	2434	87 46 3	2505	89 27 9	2517
	Antares W.	70 33 8	2441	72 15 44	2453	73 58 3	2465	75 40 6	2477
	α Arietis E.	77 30 2	2457	75 47 48	2469	74 5 51	2480	72 24 10	2495
	Aldebaran E.	109 39 18	2515	107 58 26	2525	106 17 47	2535	104 37 23	2545
13	SATURN W.	97 48 22	2521	99 27 43	2534	101 6 46	2608	102 45 30	2622
	Antares W.	84 6 4	2539	85 46 23	2555	87 26 23	2566	89 6 5	2579
	α Arietis E.	64 0 11	2558	62 20 18	2572	60 40 44	2585	59 1 29	2599
	Aldebaran E.	96 19 14	2605	94 40 26	2618	93 1 55	2631	91 23 42	2645
14	Antares W.	97 19 58	2648	98 57 48	2661	100 35 20	2675	102 12 33	2689
	α Aquilæ W.	49 58 54	2737	51 13 59	2758	52 29 45	2785	53 46 6	2806
	α Arietis E.	50 50 6	2672	49 12 49	2688	47 35 53	2705	45 59 17	2719
	Aldebaran E.	83 17 14	2713	81 40 52	2729	80 4 50	2745	78 29 7	2758
15	α Aquilæ W.	60 14 18	2600	61 32 52	2628	62 51 39	2679	64 10 36	2671
	Fomalhaut W.	35 50 21	2643	37 1 18	2665	38 13 32	2697	39 26 55	2697
	α Arietis E.	38 1 30	2798	36 27 0	2815	34 52 52	2832	33 19 6	2849
	Aldebaran E.	70 35 24	2832	69 1 38	2848	67 28 12	2862	65 55 5	2878
	VENUS E.	102 35 31	3168	101 8 43	3182	99 42 12	3197	98 15 59	3211
16	α Aquilæ W.	70 46 55	3555	72 6 19	3555	73 25 43	3555	74 45 6	3557
	Fomalhaut W.	45 46 48	3637	47 4 42	3611	48 23 4	3588	49 41 51	3569
	Aldebaran E.	58 14 24	2954	56 43 14	2970	55 12 24	2985	53 41 53	3001
	VENUS E.	91 9 6	3281	89 44 32	3294	88 20 13	3307	86 56 10	3319
	Pollux E.	100 10 48	2822	98 38 6	2894	97 5 39	2906	95 33 28	2917
17	α Aquilæ W.	81 21 15	3576	82 40 15	3582	83 59 9	3588	85 17 56	3594
	Fomalhaut W.	56 20 20	3502	57 40 42	3494	59 1 13	3487	60 21 52	3480
	α Pegasi W.	33 35 19	3514	34 55 28	3482	36 16 12	3454	37 37 27	3431
	Aldebaran E.	46 14 13	3082	44 45 41	3098	43 17 29	3116	41 49 39	3133
	VENUS E.	79 59 26	3379	78 36 45	3390	77 14 17	3400	75 52 0	3410
	Pollux E.	87 56 3	2971	86 25 14	2981	84 54 37	2990	83 24 12	2999
	SUN E.	121 21 21	3310	119 57 21	3321	118 33 34	3332	117 9 59	3341
18	α Aquilæ W.	91 50 3	3632	93 8 3	3639	94 25 55	3649	95 43 37	3657
	Fomalhaut W.	67 6 33	3461	68 27 41	3458	69 48 52	3455	71 10 6	3454
	α Pegasi W.	44 29 7	3356	45 52 14	3345	47 15 33	3337	48 39 2	3328
	VENUS E.	69 3 17	3454	67 42 0	3462	66 20 53	3468	64 59 53	3473
	Pollux E.	75 54 48	3039	74 25 24	3047	72 56 9	3055	71 27 2	3060
	SUN E.	110 14 42	3384	108 52 7	3391	107 29 40	3398	106 7 21	3404

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10	Spica W.	95 32 17	2335	97 17 25	2343	99 2 22	2351	100 47 7	2359
	SATURN W.	63 45 43	2376	65 29 52	2382	67 13 52	2389	68 57 42	2397
	Antares W.	49 43 29	2348	51 28 47	2337	53 13 53	2344	54 58 48	2353
	α Pegasi E.	56 42 33	2371	55 2 58	2388	53 23 47	2369	51 45 4	2369
	α Arietis E.	98 15 26	2344	96 30 30	2351	94 45 45	2359	93 1 11	2368
11	SATURN W.	77 33 59	2441	79 16 36	2450	80 58 59	2460	82 41 8	2471
	Antares W.	63 40 12	2399	65 23 48	2409	67 7 10	2419	68 50 17	2431
	α Pegasi E.	43 39 29	2708	42 4 19	2803	40 29 55	2841	38 56 22	2885
	α Arietis E.	84 21 32	2424	82 38 17	2484	80 55 17	2435	79 12 32	2445
12	SATURN W.	91 7 58	2390	92 48 30	2542	94 28 45	2555	96 8 42	2567
	Antares W.	77 21 52	2489	79 3 21	2501	80 44 33	2514	82 25 27	2526
	α Arietis E.	70 42 47	2505	69 1 41	2518	67 20 53	2531	65 40 23	2544
	Aldebaran E.	102 57 13	2357	101 17 19	2369	99 37 41	2380	97 58 19	2393
13	SATURN W.	104 23 55	2636	106 2 1	2650	107 39 48	2665	109 17 15	2680
	Antares W.	90 45 29	2593	92 24 34	2606	94 3 21	2620	95 41 49	2634
	α Arietis E.	57 22 33	2614	55 43 57	2628	54 5 40	2643	52 27 43	2657
	Aldebaran E.	89 45 48	2658	88 8 12	2672	86 30 54	2686	84 53 55	2699
14	Antares W.	103 49 28	2708	105 26 4	2717	107 2 21	2731	108 38 20	2744
	α Aquilæ W.	55 2 57	2671	56 20 15	2649	57 37 57	2630	58 55 59	2624
	α Arietis E.	44 23 2	2735	42 47 8	2750	41 11 34	2766	39 36 21	2782
	Aldebaran E.	76 53 44	2772	75 18 40	2787	73 43 55	2802	72 9 30	2817
15	α Aquilæ W.	65 29 42	3565	66 48 54	3561	68 8 11	3557	69 27 32	3555
	Fomalhaut W.	40 41 19	3785	41 56 37	3741	43 12 41	3704	44 29 26	3667
	α Arietis E.	31 45 42	2867	30 12 41	2887	28 40 5	2905	27 7 53	2926
	Aldebaran E.	64 22 18	2893	62 49 50	2909	61 17 42	2924	59 45 53	2939
	VENUS E.	96 50 3	3225	95 24 24	3240	93 59 2	3253	92 33 56	3267
16	α Aquilæ W.	76 4 27	3560	77 23 45	3563	78 43 0	3567	80 2 10	3572
	Fomalhaut W.	51 0 59	3551	52 20 27	3536	53 40 11	3524	55 0 9	3512
	Aldebaran E.	52 11 42	3017	50 41 50	3033	49 12 18	3048	47 43 5	3065
	VENUS E.	85 32 21	3332	84 8 47	3344	82 45 26	3356	81 22 19	3368
	Pollux E.	94 1 31	2929	92 29 49	2939	90 58 20	2950	89 27 5	2961
17	α Aquilæ W.	86 36 37	3601	87 55 10	3608	89 13 36	3615	90 31 54	3623
	Fomalhaut W.	61 42 38	3475	63 3 30	3471	64 24 27	3467	65 45 28	3463
	α Pegasi W.	38 59 8	3412	40 21 11	3394	41 43 34	3380	43 6 13	3367
	Aldebaran E.	40 22 10	3152	38 55 3	3172	37 28 20	3192	36 2 1	3213
	VENUS E.	74 29 55	3419	73 8 0	3429	71 46 16	3438	70 24 42	3446
	Pollux E.	81 53 58	3008	80 23 55	3017	78 54 3	3025	77 24 21	3032
	SUN E.	115 46 35	3351	114 23 22	3359	113 0 19	3368	111 37 26	3376
18	α Aquilæ W.	97 1 10	3666	98 18 33	3676	99 35 46	3686	100 52 48	3696
	Fomalhaut W.	72 31 21	3453	73 52 38	3452	75 13 56	3450	76 35 16	3449
	α Pegasi W.	50 2 41	3321	51 26 28	3315	52 50 22	3309	54 14 23	3304
	VENUS E.	63 38 59	3480	62 18 12	3486	60 57 32	3490	59 36 57	3495
	Pollux E.	69 58 3	3065	68 29 11	3070	67 0 25	3075	65 31 45	3079
	SUN E.	104 45 9	3410	103 23 4	3415	102 1 5	3420	100 39 11	3424

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		° ' "		° ' "		° ' "		° ' "	
19	<i>α</i> Aquilæ W.	102 9 39	3707	103 26 19	3718	104 42 47	3729	105 59 3	3741
	Fomalhaut W.	77 56 37	3448	79 17 59	3447	80 39 22	3446	82 0 46	3446
	<i>α</i> Pegasi W.	55 38 30	3298	57 2 44	3294	58 27 3	3288	59 51 28	3284
	VENUS E.	58 16 27	3499	56 56 2	3502	55 35 40	3506	54 15 22	3507
	Pollux E.	64 3 10	3083	62 34 40	3087	61 6 15	3090	59 37 53	3093
	SUN E.	99 17 22	3428	97 55 37	3431	96 33 56	3434	95 12 18	3437
20	Fomalhaut W.	88 47 57	3444	90 9 26	3441	91 30 56	3440	92 52 27	3438
	<i>α</i> Pegasi W.	66 54 53	3260	68 19 51	3256	69 44 54	3251	71 10 3	3246
	<i>α</i> Arietis W.	23 24 10	3139	24 51 8	3148	26 18 19	3139	27 45 41	3130
	VENUS E.	47 34 19	3512	46 14 8	3511	44 53 56	3510	43 33 43	3508
	Pollux E.	52 16 45	3101	50 48 36	3101	49 20 28	3101	47 52 20	3101
	SUN E.	88 24 34	3439	87 3 2	3438	85 41 29	3437	84 19 54	3435
21	Fomalhaut W.	99 40 21	3434	101 1 59	3433	102 23 38	3433	103 45 17	3432
	<i>α</i> Pegasi W.	78 17 23	3217	79 43 12	3211	81 9 8	3204	82 35 12	3198
	<i>α</i> Arietis W.	35 5 1	3091	36 33 21	3084	38 1 50	3076	39 30 29	3068
	VENUS E.	36 51 58	3492	35 31 25	3488	34 10 48	3483	32 50 5	3479
	Pollux E.	40 31 27	3095	39 3 11	3094	37 34 54	3091	36 6 34	3091
	SUN E.	77 31 15	3417	76 9 18	3412	74 47 15	3407	73 25 6	3400
22	Fomalhaut W.	110 33 40	3432	111 55 20	3433	113 16 59	3435	114 38 36	3438
	<i>α</i> Pegasi W.	89 47 38	3160	91 14 35	3153	92 41 41	3144	94 8 57	3136
	<i>α</i> Arietis W.	46 56 16	3025	48 25 58	3015	49 55 52	3005	51 25 58	2996
	Aldebaran W.	17 17 0	3810	18 31 52	3806	19 48 54	3782	21 7 48	3768
	SUN E.	66 32 27	3364	65 9 29	3354	63 46 20	3345	62 23 1	3337
23	<i>α</i> Pegasi W.	101 27 52	3092	102 56 11	3083	104 24 41	3074	105 53 22	3066
	<i>α</i> Arietis W.	58 59 42	2942	60 31 8	2930	62 2 49	2918	63 34 45	2906
	Aldebaran W.	28 2 11	3219	29 27 58	3180	30 54 31	3146	32 21 45	3114
	SUN E.	55 23 34	3282	53 59 2	3271	52 34 17	3259	51 9 18	3247
24	<i>α</i> Arietis W.	71 18 20	2843	72 51 52	2829	74 25 42	2816	75 59 49	2802
	Aldebaran W.	39 46 47	2984	41 17 20	2961	42 48 22	2939	44 19 51	2919
	SUN E.	44 0 39	3183	42 34 9	3169	41 7 23	3155	39 40 20	3142
25	<i>α</i> Arietis W.	83 54 50	2735	85 30 44	2720	87 6 57	2707	88 43 28	2692
	Aldebaran W.	52 3 39	2822	53 37 38	2805	55 12 0	2787	56 46 45	2769
	SUN E.	32 20 59	3073	30 52 17	3060	29 23 18	3047	27 54 3	3034
29	SUN W.	17 49 8	2691	19 25 56	2681	21 3 2	2668	22 40 25	2657
	SATURN E.	61 24 38	2398	59 41 1	2392	57 57 15	2387	56 13 21	2382
	Antares E.	74 19 58	2342	72 34 59	2334	70 49 49	2327	69 4 29	2320
30	SUN W.	30 50 41	2615	32 29 16	2608	34 8 0	2602	35 46 52	2598
	SATURN E.	47 32 24	2366	45 48 1	2366	44 3 37	2365	42 19 12	2366
	Antares E.	60 15 30	2291	58 29 18	2287	56 43 0	2283	54 56 35	2279
	<i>α</i> Aquilæ E.	111 48 24	3009	110 18 22	2988	108 47 54	2969	107 17 2	2952
31	SUN W.	44 2 42	2579	45 42 6	2576	47 21 34	2574	49 1 5	2572
	Antares E.	46 3 14	2264	44 16 21	2262	42 29 26	2260	40 42 28	2259
	<i>α</i> Aquilæ E.	99 38 2	2891	98 5 31	2883	96 32 51	2877	95 0 3	2873

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19	α Aquilæ W. Fomalhaut W. α Pegasi W. VENUS E. Pollux E. SUN E.	107 15 7 83 22 10 61 15 58 52 55 6 58 9 35 93 50 43	3754 3445 3279 3510 3095 3438	108 30 57 84 43 36 62 40 34 51 34 53 56 41 19 92 29 10	3767 3445 3275 3511 3097 3438	109 46 34 86 5 2 64 5 15 50 14 41 55 13 6 91 7 37	3781 3444 3270 3512 3099 3439	111 1 56 87 26 29 65 30 1 48 54 30 53 44 55 89 46 5	3794 3443 3265 3512 3100 3440
20	Fomalhaut W. α Pegasi W. α Arietis W. VENUS E. Pollux E. SUN E.	94 14 0 72 35 18 29 13 14 42 13 28 46 24 11 82 58 17	3438 3241 3122 3506 3101 3438	95 35 33 74 0 39 30 40 57 40 53 11 44 56 2 81 36 37	3437 3235 3114 3503 3100 3430	96 57 8 75 26 7 32 8 49 39 32 50 43 27 52 80 14 54	3436 3230 3107 3500 3098 3426	98 18 44 76 51 41 33 36 50 38 12 26 41 59 40 78 53 7	3435 3223 3099 3497 3097 3422
21	Fomalhaut W. α Pegasi W. α Arietis W. VENUS E. Pollux E. SUN E.	105 6 57 84 1 24 40 59 18 31 29 17 34 38 13 72 2 50	3432 3191 3060 3472 3089 3394	106 28 37 85 27 44 42 28 17 30 8 22 33 9 50 70 40 27	3431 3183 3052 3467 3087 3387	107 50 18 86 54 13 43 57 26 28 47 21 31 41 25 69 17 56	3431 3176 3043 3461 3087 3379	109 11 59 88 20 51 45 26 45 27 26 13 30 12 59 67 55 16	3431 3168 3034 3454 3058 3372
22	Fomalhaut W. α Pegasi W. α Arietis W. Aldebaran W. SUN E.	116 0 10 95 36 23 52 56 16 22 28 18 60 59 32	3440 3128 2985 3443 3326	117 21 41 97 3 59 54 26 47 23 50 9 59 35 51	3444 3119 2974 3361 3316	118 43 8 98 31 46 55 57 32 25 13 10 58 11 58	3448 3110 2964 3307 3306	120 4 30 99 59 44 57 28 30 26 37 13 56 47 53	3453 3101 2953 3260 3294
23	α Pegasi W. α Arietis W. Aldebaran W. SUN E.	107 22 13 65 6 56 33 49 38 49 44 4	3057 2894 3084 3235	108 51 15 66 39 22 35 18 7 48 18 36	3048 2881 3057 3221	110 20 28 68 12 5 36 47 9 46 52 52	3040 2869 3031 3209	111 49 51 69 45 4 38 16 43 45 26 53	3031 2855 3007 3196
24	α Arietis W. Aldebaran W. SUN E.	77 34 14 45 51 46 38 13 1	2789 2898 3128	79 8 56 47 24 7 36 45 25	2775 2879 3114	80 43 56 48 56 53 35 17 33	2762 2859 3101	82 19 14 50 30 4 33 49 24	2748 2841 3087
25	α Arietis W. Aldebaran W. SUN E.	90 20 18 58 21 53 26 24 32	2679 2753 3021	91 57 26 59 57 23 24 54 45	2665 2735 3009	93 34 53 61 33 16 23 24 44	2652 2719 2997	95 12 38 63 9 30 21 54 28	2638 2704 2987
29	SUN W. SATURN E. Antares E.	24 18 3 54 29 21 67 18 59	2646 2378 2313	25 55 55 52 45 14 65 33 19	2638 2374 2308	27 33 59 51 1 2 63 47 31	2629 2371 2302	29 12 15 49 16 45 62 1 34	2621 2368 2297
30	SUN W. SATURN E. Antares E. α Aquilæ E.	37 25 50 40 34 49 53 10 5 105 45 49	2593 2368 2275 2956	39 4 55 38 50 28 51 23 29 104 14 16	2588 2371 2272 2923	40 44 6 37 6 11 49 36 48 102 42 26	2585 2375 2269 2921	42 23 22 35 22 0 47 50 3 101 10 21	2582 2380 2266 2900
31	SUN W. Antares E. α Aquilæ E.	50 40 39 38 55 28 93 27 9	2570 2258 2869	52 20 15 37 8 26 91 54 10	2569 2257 2867	53 59 52 35 21 23 90 21 9	2568 2256 2866	55 39 31 33 34 19 88 48 7	2568 2256 2866

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		^h ^m ^s	^s	[°] ['] ["]	["]	['] ["]	^s	^m ^s	^s
Wed.	1	10 43 24.64	9.067	N. 8 5 56.2	-54.63	15 53.77	64.40	0 13.44	0.787
Thur.	2	10 47 2.10	9.055	7 44 1.2	54.94	15 54.01	64.36	0 32.49	0.799
Frid.	3	10 50 39.28	9.043	7 21 58.7	55.25	15 54.25	64.32	0 51.81	0.811
Sat.	4	10 54 16.18	9.032	6 59 49.2	-55.54	15 54.50	64.28	1 11.41	0.823
SUN.	5	10 57 52.83	9.022	6 37 32.9	55.81	15 54.74	64.25	1 31.26	0.832
Mon.	6	11 1 29.25	9.013	6 15 10.3	56.07	15 54.99	64.22	1 51.34	0.841
Tues.	7	11 5 5.45	9.004	5 52 41.5	-56.32	15 55.24	64.19	2 11.63	0.850
Wed.	8	11 8 41.46	8.997	5 30 7.0	56.56	15 55.49	64.17	2 32.12	0.857
Thur.	9	11 12 17.29	8.990	5 7 27.0	56.78	15 55.74	64.15	2 52.79	0.864
Frid.	10	11 15 52.97	8.984	4 44 41.7	-56.99	15 56.00	64.13	3 13.60	0.870
Sat.	11	11 19 28.52	8.979	4 21 51.6	57.18	15 56.25	64.11	3 34.55	0.875
SUN.	12	11 23 3.97	8.975	3 58 56.9	57.36	15 56.50	64.10	3 55.60	0.879
Mon.	13	11 26 39.34	8.972	3 35 57.9	-57.54	15 56.76	64.09	4 16.73	0.882
Tues.	14	11 30 14.64	8.970	3 12 54.9	57.70	15 57.01	64.08	4 37.92	0.884
Wed.	15	11 33 49.91	8.969	2 49 48.3	57.85	15 57.27	64.07	4 59.14	0.885
Thur.	16	11 37 25.16	8.969	2 26 38.3	-57.98	15 57.53	64.07	5 20.39	0.885
Frid.	17	11 41 0.42	8.970	2 3 25.2	58.10	15 57.78	64.07	5 41.62	0.884
Sat.	18	11 44 35.72	8.972	1 40 9.5	58.21	15 58.04	64.07	6 2.82	0.882
SUN.	19	11 48 11.06	8.974	1 16 51.4	-58.30	15 58.30	64.08	6 23.98	0.880
Mon.	20	11 51 46.47	8.977	0 53 31.2	58.38	15 58.56	64.09	6 45.06	0.876
Tues.	21	11 55 21.98	8.982	0 30 9.3	58.44	15 58.82	64.10	7 6.05	0.872
Wed.	22	11 58 57.59	8.987	N. 0 6 46.1	-58.49	15 59.09	64.11	7 26.93	0.867
Thur.	23	12 2 33.34	8.992	S. 0 16 38.0	58.52	15 59.35	64.13	7 47.69	0.862
Frid.	24	12 6 9.23	8.999	0 40 2.8	58.53	15 59.62	64.15	8 8.29	0.855
Sat.	25	12 9 45.28	9.006	1 3 27.8	-58.54	15 59.89	64.18	8 28.73	0.848
SUN.	26	12 13 21.52	9.014	1 26 52.6	58.53	16 0.17	64.21	8 48.99	0.840
Mon.	27	12 16 57.96	9.023	1 50 17.0	58.50	16 0.44	64.24	9 9.05	0.831
Tues.	28	12 20 34.61	9.032	2 13 40.4	-58.45	16 0.72	64.27	9 28.90	0.822
Wed.	29	12 24 11.49	9.042	2 37 2.6	58.39	16 1.00	64.31	9 48.52	0.812
Thur.	30	12 27 48.63	9.054	3 0 23.1	58.31	16 1.28	64.35	10 7.88	0.801
Frid.	31	12 31 26.03	9.066	S. 3 23 41.6	-58.22	16 1.56	64.39	10 26.98	0.790

NOTE.—The mean time of semidiameter passing may be found by subtracting 0.18 from the sidereal time.

The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing; south declinations increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
Wed.	1	^h 10 ^m 43 ^s 24.67	^s 9.069	N. 8 5 56.0	—54.65	^m 0 ^s 13.45	^s 0.787	^h 10 ^m 43 ^s 38.12
Thur.	2	10 47 2.18	9.057	7 44 0.6	54.97	0 32.50	0.799	10 47 34.68
Frid.	3	10 50 39.41	9.045	7 21 57.8	55.26	0 51.83	0.811	10 51 31.23
Sat.	4	10 54 16.36	9.034	6 59 48.0	—55.54	1 11.43	0.822	10 55 27.79
SUN.	5	10 57 53.06	9.024	6 37 31.4	55.82	1 31.28	0.832	10 59 24.34
Mon.	6	11 1 29.53	9.015	6 15 8.5	56.08	1 51.36	0.841	11 3 20.89
Tues.	7	11 5 5.78	9.006	5 52 39.4	—56.33	2 11.67	0.850	11 7 17.45
Wed.	8	11 8 41.84	8.999	5 30 4.5	56.57	2 32.16	0.858	11 11 14.00
Thur.	9	11 12 17.72	8.992	5 7 24.2	56.79	2 52.83	0.864	11 15 10.55
Frid.	10	11 15 53.46	8.986	4 44 38.6	—57.00	3 13.65	0.870	11 19 7.11
Sat.	11	11 19 29.06	8.981	4 21 48.2	57.20	3 34.60	0.875	11 23 3.66
SUN.	12	11 23 4.56	8.977	3 58 53.1	57.39	3 55.66	0.879	11 27 0.22
Mon.	13	11 26 39.98	8.974	3 35 53.8	—57.56	4 16.79	0.882	11 30 56.77
Tues.	14	11 30 15.33	8.972	3 12 50.4	57.72	4 37.99	0.884	11 34 53.32
Wed.	15	11 33 50.65	8.971	2 49 43.4	57.86	4 59.22	0.885	11 38 49.87
Thur.	16	11 37 25.96	8.971	2 26 33.1	—57.99	5 20.47	0.885	11 42 46.43
Frid.	17	11 41 1.27	8.972	2 3 19.7	58.11	5 41.71	0.884	11 46 42.98
Sat.	18	11 44 36.62	8.974	1 40 3.6	58.22	6 2.92	0.882	11 50 39.54
SUN.	19	11 48 12.01	8.976	1 16 45.1	—58.31	6 24.07	0.880	11 54 36.09
Mon.	20	11 51 47.48	8.979	0 53 24.6	58.39	6 45.16	0.877	11 58 32.64
Tues.	21	11 55 23.04	8.984	0 30 2.4	58.45	7 6.16	0.873	12 2 29.19
Wed.	22	11 58 58.71	8.989	N. 0 6 38.8	—58.50	7 27.04	0.868	12 6 25.75
Thur.	23	12 2 34.50	8.995	S. 0 16 45.7	58.53	7 47.80	0.862	12 10 22.30
Frid.	24	12 6 10.45	9.001	0 40 10.8	58.54	8 8.41	0.855	12 14 18.85
Sat.	25	12 9 46.56	9.008	1 3 36.1	—58.55	8 28.85	0.848	12 18 15.41
SUN.	26	12 13 22.84	9.016	1 27 1.3	58.54	8 49.12	0.840	12 22 11.96
Mon.	27	12 16 59.33	9.025	1 50 25.9	58.51	9 9.18	0.832	12 26 8.51
Tues.	28	12 20 36.04	9.034	2 13 49.7	—58.46	9 29.03	0.823	12 30 5.07
Wed.	29	12 24 12.97	9.044	2 37 12.2	58.40	9 48.65	0.812	12 34 1.62
Thur.	30	12 27 50.15	9.055	3 0 33.0	58.32	10 8.02	0.801	12 37 58.17
Frid.	31	12 31 27.61	9.066	S. 3 23 51.8	—58.23	10 27.12	0.790	12 41 54.73

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
 The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing; south declinations, increasing.

Diff. for 1 Hour,
 + 9".8565.
 (Table III.)

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ'					
1	244	159 16 31.4	15 42.9	145.35	— 0.57	0.0037294	—44.9	h m s 13 14 11.41
2	245	160 14 40.4	13 51.8	145.41	0.55	0.0036209	45.5	13 10 15.50
3	246	161 12 50.8	12 2.1	145.47	0.49	0.0035110	46.0	13 6 19.60
4	247	162 11 2.7	10 13.8	145.53	— 0.41	0.0034000	—46.4	13 2 23.69
5	248	163 9 16.1	8 27.1	145.59	0.30	0.0032881	46.8	12 58 27.78
6	249	164 7 31.0	6 41.9	145.65	0.17	0.0031754	47.1	12 54 31.87
7	250	165 5 47.3	4 58.1	145.71	— 0.04	0.0030619	—47.4	12 50 35.96
8	251	166 4 5.3	3 16.0	145.78	+ 0.11	0.0029479	47.6	12 46 40.06
9	252	167 2 24.8	1 35.4	145.85	0.24	0.0028333	47.8	12 42 44.15
10	253	167 60 46.1	59 56.6	145.92	+ 0.36	0.0027185	—47.9	12 38 48.24
11	254	168 59 9.2	58 19.6	146.00	0.46	0.0026033	48.0	12 34 52.33
12	255	169 57 34.1	56 44.4	146.08	0.54	0.0024880	48.1	12 30 56.42
13	256	170 56 0.9	55 11.1	146.16	+ 0.59	0.0023725	—48.2	12 27 0.52
14	257	171 54 29.8	53 39.8	146.24	0.63	0.0022568	48.3	12 23 4.61
15	258	172 53 0.7	52 10.6	146.33	0.62	0.0021409	48.4	12 19 8.70
16	259	173 51 33.7	50 43.5	146.42	+ 0.59	0.0020247	—48.5	12 15 12.80
17	260	174 50 8.9	49 18.6	146.51	0.52	0.0019082	48.7	12 11 16.89
18	261	175 48 46.3	47 55.9	146.60	0.43	0.0017912	48.9	12 7 20.98
19	262	176 47 25.9	46 35.4	146.70	+ 0.33	0.0016737	—49.1	12 3 25.08
20	263	177 46 7.8	45 17.2	146.79	0.20	0.0015555	49.4	11 59 29.17
21	264	178 44 51.9	44 1.2	146.88	+ 0.07	0.0014366	49.7	11 55 33.26
22	265	179 43 38.2	42 47.4	146.97	— 0.06	0.0013169	—50.0	11 51 37.35
23	266	180 42 26.8	41 35.9	147.06	0.17	0.0011964	50.4	11 47 41.44
24	267	181 41 17.4	40 26.4	147.15	0.29	0.0010749	50.8	11 43 45.54
25	268	182 40 10.2	39 19.1	147.24	— 0.38	0.0009526	—51.2	11 39 49.63
26	269	183 39 5.1	38 13.9	147.33	0.45	0.0008292	51.6	11 35 53.72
27	270	184 38 2.0	37 10.7	147.41	0.48	0.0007048	52.0	11 31 57.82
28	271	185 37 0.7	36 9.3	147.49	— 0.48	0.0005798	—52.3	11 28 1.91
29	272	186 36 1.5	35 10.0	147.57	0.46	0.0004538	52.6	11 24 6.00
30	273	187 35 4.1	34 12.5	147.65	0.41	0.0003273	52.8	11 20 10.09
31	274	188 34 8.4	33 16.7	147.72	— 0.33	0.0002002	—53.1	11 16 14.18

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ' to the mean equinox of January 0th.

Diff. for 1 Hour,
—9^h.8296.
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.									
	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	' "	' "	' "	"	' "	"	h m	m	d
1	16 13.5	16 13.6	59 26.2	+0.13	59 26.8	-0.02	3 33.5	2.30	4.4
2	16 13.3	16 12.6	59 25.7	-0.15	59 23.1	0.28	4 30.5	2.45	5.4
3	16 11.6	16 10.1	59 19.1	0.38	59 13.9	0.48	5 30.6	2.55	6.4
4	16 8.4	16 6.4	59 7.6	-0.57	59 0.2	-0.66	6 32.3	2.57	7.4
5	16 4.1	16 1.6	58 51.8	0.74	58 42.5	0.81	7 33.1	2.49	8.4
6	15 58.8	15 55.8	58 32.3	0.88	58 21.3	0.95	8 31.2	2.34	9.4
7	15 52.6	15 49.1	58 9.4	-1.03	57 56.6	-1.10	9 25.3	2.17	10.4
8	15 45.4	15 41.5	57 43.0	1.16	57 28.7	1.22	10 15.5	2.01	11.4
9	15 37.4	15 33.2	57 13.7	1.27	56 58.2	1.31	11 2.3	1.89	12.4
10	15 28.8	15 24.4	56 42.2	-1.35	56 25.9	-1.36	11 46.8	1.82	13.4
11	15 20.0	15 15.5	56 9.6	1.35	55 53.4	1.33	12 30.0	1.79	14.4
12	15 11.2	15 7.1	55 37.6	1.29	55 22.4	1.23	13 12.8	1.79	15.4
13	15 3.2	14 59.6	55 8.0	-1.15	54 54.8	-1.05	13 56.3	1.83	16.4
14	14 56.3	14 53.5	54 42.9	0.93	54 32.6	0.78	14 41.1	1.90	17.4
15	14 51.2	14 49.4	54 24.1	0.63	54 17.5	0.46	15 27.7	1.98	18.4
16	14 48.2	14 47.7	54 13.1	-0.27	54 11.0	-0.07	16 16.2	2.06	19.4
17	14 47.8	14 48.5	54 11.4	+0.13	54 14.2	+0.35	17 6.2	2.11	20.4
18	14 50.0	14 52.2	54 19.7	0.56	54 27.7	0.78	17 57.3	2.13	21.4
19	14 55.1	14 58.7	54 38.3	+0.99	54 51.4	+1.19	18 48.4	2.12	22.4
20	15 2.9	15 7.7	55 6.9	1.39	55 24.7	1.57	19 38.9	2.08	23.4
21	15 13.1	15 19.0	55 44.5	1.73	56 6.1	1.86	20 28.2	2.03	24.4
22	15 25.3	15 31.9	56 29.2	+1.97	56 53.3	+2.04	21 16.3	1.99	25.4
23	15 38.6	15 45.4	57 18.1	2.08	57 43.1	2.07	22 3.8	1.97	26.4
24	15 52.1	15 58.6	58 7.7	2.02	58 31.5	1.92	22 51.4	2.00	27.4
25	16 4.7	16 10.2	58 53.8	+1.78	59 14.2	+1.60	23 40.0	2.06	28.4
26	16 15.1	16 19.2	59 32.2	1.38	59 47.3	1.13	6	2.18	29.4
27	16 22.5	16 24.9	59 59.3	0.86	60 8.0	0.58	0 30.8	2.18	0.9
28	16 26.3	16 26.7	60 13.2	+0.29	60 14.9	+0.01	1 24.7	2.32	1.9
29	16 26.3	16 25.1	60 13.4	-0.25	60 8.8	-0.50	2 22.3	2.47	2.9
30	16 23.0	16 20.3	60 1.3	0.73	59 51.4	0.91	3 23.2	2.59	3.9
31	16 17.1	16 13.4	59 39.5	-1.06	59 25.9	-1.18	4 25.8	2.61	4.9

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 1.					FRIDAY 3.				
0	14 9 13.76	2.3637	S. 18 34 1.0	12.020	0	16 8 43.71	2.5955	S. 25 35 39.7	5.050
1	14 11 35.74	2.3692	18 45 58.3	11.899	1	16 11 19.53	2.5985	25 40 37.5	4.876
2	14 13 58.06	2.3748	18 57 48.9	11.787	2	16 13 55.53	2.6014	25 45 24.8	4.702
3	14 16 20.71	2.3803	19 9 32.7	11.672	3	16 16 31.70	2.6042	25 50 1.7	4.528
4	14 18 43.70	2.3859	19 21 9.5	11.556	4	16 19 8.03	2.6068	25 54 28.1	4.352
5	14 21 7.02	2.3915	19 32 39.4	11.438	5	16 21 44.52	2.6093	25 58 43.9	4.175
6	14 23 30.68	2.3971	19 44 2.1	11.318	6	16 24 21.15	2.6117	26 2 49.1	3.998
7	14 25 54.67	2.4027	19 55 17.6	11.198	7	16 26 57.92	2.6139	26 6 43.7	3.822
8	14 28 19.00	2.4083	20 6 25.8	11.076	8	16 29 34.82	2.6160	26 10 27.7	3.644
9	14 30 43.66	2.4138	20 17 26.7	10.952	9	16 32 11.84	2.6180	26 14 1.0	3.465
10	14 33 8.65	2.4193	20 28 20.0	10.826	10	16 34 48.98	2.6198	26 17 23.5	3.286
11	14 35 33.98	2.4248	20 39 5.8	10.699	11	16 37 26.22	2.6215	26 20 35.3	3.107
12	14 37 59.63	2.4303	20 49 43.9	10.571	12	16 40 3.56	2.6231	26 23 36.3	2.927
13	14 40 25.62	2.4359	21 0 14.3	10.441	13	16 42 40.99	2.6246	26 26 26.5	2.746
14	14 42 51.94	2.4414	21 10 36.8	10.308	14	16 45 18.51	2.6259	26 29 5.8	2.565
15	14 45 18.59	2.4469	21 20 51.3	10.176	15	16 47 56.10	2.6270	26 31 34.3	2.384
16	14 47 45.57	2.4523	21 30 57.9	10.042	16	16 50 33.75	2.6280	26 33 51.9	2.203
17	14 50 12.87	2.4577	21 40 56.3	9.905	17	16 53 11.46	2.6288	26 35 58.7	2.022
18	14 52 40.49	2.4631	21 50 46.5	9.767	18	16 55 49.21	2.6296	26 37 54.6	1.840
19	14 55 8.44	2.4685	22 0 28.4	9.628	19	16 58 27.01	2.6303	26 39 39.5	1.658
20	14 57 36.71	2.4738	22 10 1.9	9.488	20	17 1 4.84	2.6307	26 41 13.5	1.476
21	15 0 5.29	2.4790	22 19 27.0	9.347	21	17 3 42.69	2.6309	26 42 36.6	1.294
22	15 2 34.19	2.4842	22 28 43.5	9.203	22	17 6 20.55	2.6311	26 43 48.8	1.112
23	15 5 3.40	2.4894	S. 22 37 51.4	9.059	23	17 8 58.42	2.6311	S. 26 44 50.0	0.928
THURSDAY 2.					SATURDAY 4.				
0	15 7 32.92	2.4945	S. 22 46 50.6	8.913	0	17 11 36.28	2.6309	S. 26 45 40.2	0.746
1	15 10 2.74	2.4996	22 55 41.0	8.766	1	17 14 14.13	2.6306	26 46 19.5	0.564
2	15 12 32.87	2.5047	23 4 22.5	8.617	2	17 16 51.95	2.6302	26 46 47.9	0.382
3	15 15 3.30	2.5096	23 12 55.0	8.467	3	17 19 29.75	2.6296	26 47 5.4	0.200
4	15 17 34.02	2.5145	23 21 18.5	8.315	4	17 22 7.50	2.6288	26 47 11.9	- 0.018
5	15 20 5.04	2.5193	23 29 32.8	8.163	5	17 24 45.20	2.6279	26 47 7.5	+ 0.164
6	15 22 36.34	2.5241	23 37 38.0	8.009	6	17 27 22.85	2.6269	26 46 52.2	0.346
7	15 25 7.93	2.5288	23 45 33.9	7.854	7	17 30 0.43	2.6257	26 46 26.0	0.527
8	15 27 39.80	2.5334	23 53 20.5	7.697	8	17 32 37.94	2.6244	26 45 48.9	0.708
9	15 30 11.94	2.5380	24 0 57.6	7.539	9	17 35 15.36	2.6229	26 45 1.0	0.888
10	15 32 44.36	2.5425	24 8 25.2	7.381	10	17 37 52.69	2.6213	26 44 2.3	1.069
11	15 35 17.04	2.5469	24 15 43.3	7.222	11	17 40 29.92	2.6195	26 42 52.7	1.250
12	15 37 49.99	2.5512	24 22 51.8	7.061	12	17 43 7.03	2.6176	26 41 32.3	1.429
13	15 40 23.19	2.5554	24 29 50.6	6.898	13	17 45 44.03	2.6156	26 40 1.2	1.608
14	15 42 56.64	2.5596	24 36 39.6	6.735	14	17 48 20.90	2.6133	26 38 19.3	1.787
15	15 45 30.34	2.5637	24 43 18.8	6.571	15	17 50 57.63	2.6110	26 36 26.7	1.965
16	15 48 4.28	2.5676	24 49 48.1	6.406	16	17 53 34.22	2.6086	26 34 23.5	2.143
17	15 50 38.45	2.5714	24 56 7.5	6.239	17	17 56 10.66	2.6059	26 32 9.6	2.320
18	15 53 12.85	2.5752	25 2 16.8	6.072	18	17 58 46.93	2.6032	26 29 45.1	2.496
19	15 55 47.48	2.5789	25 8 16.1	5.904	19	18 1 23.04	2.6004	26 27 10.1	2.672
20	15 58 22.32	2.5824	25 14 5.3	5.735	20	18 3 58.98	2.5974	26 24 24.5	2.848
21	16 0 57.37	2.5858	25 19 44.3	5.564	21	18 6 34.73	2.5943	26 21 28.4	3.022
22	16 3 32.62	2.5892	25 25 13.0	5.393	22	18 9 10.29	2.5910	26 18 21.9	3.195
23	16 6 8.07	2.5924	25 30 31.5	5.222	23	18 11 45.65	2.5876	26 15 5.0	3.368
24	16 8 43.71	2.5955	S. 25 35 39.7	5.050	24	18 14 20.80	2.5841	S. 26 11 37.7	3.541

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 5.					TUESDAY 7.				
0	18 14 20.80	2.5841	S. 26 11 37.7	3.541	0	20 12 34.70	2.3193	S. 20 24 19.1	10.484
1	18 16 55.74	2.5805	26 8 0.1	3.712	1	20 14 53.67	2.3190	20 13 50.4	10.333
2	18 19 30.46	2.5768	26 4 12.3	3.882	2	20 17 12.26	2.3066	20 3 15.2	10.640
3	18 22 4.95	2.5728	26 0 14.3	4.052	3	20 19 30.46	2.3002	19 52 33.6	10.746
4	18 24 39.20	2.5688	25 56 6.1	4.220	4	20 21 48.28	2.2938	19 41 45.7	10.850
5	18 27 13.21	2.5648	25 51 47.9	4.388	5	20 24 5.71	2.2873	19 30 51.6	10.952
6	18 29 46.97	2.5606	25 47 19.6	4.555	6	20 26 22.76	2.2810	19 19 51.4	11.053
7	18 32 20.48	2.5563	25 42 41.3	4.721	7	20 28 39.43	2.2747	19 8 45.2	11.152
8	18 34 53.72	2.5518	25 37 53.1	4.885	8	20 30 55.72	2.2683	18 57 33.1	11.251
9	18 37 26.70	2.5473	25 32 55.1	5.048	9	20 33 11.63	2.2620	18 46 15.1	11.348
10	18 39 59.40	2.5427	25 27 47.3	5.211	10	20 35 27.16	2.2558	18 34 51.4	11.443
11	18 42 31.82	2.5379	25 22 29.8	5.373	11	20 37 42.32	2.2495	18 23 22.0	11.536
12	18 45 3.95	2.5331	25 17 2.6	5.533	12	20 39 57.10	2.2433	18 11 47.1	11.628
13	18 47 35.79	2.5283	25 11 25.8	5.692	13	20 42 11.51	2.2370	17 0 6.7	11.718
14	18 50 7.34	2.5233	25 5 39.5	5.851	14	20 44 25.54	2.2308	17 48 21.0	11.806
15	18 52 38.58	2.5181	24 59 43.7	6.008	15	20 46 39.20	2.2246	17 36 30.0	11.893
16	18 55 9.51	2.5129	24 53 38.6	6.163	16	20 48 52.49	2.2183	17 24 33.9	11.978
17	18 57 40.13	2.5077	24 47 24.2	6.317	17	20 51 5.42	2.2124	17 12 32.6	12.063
18	19 0 10.43	2.5023	24 41 0.5	6.471	18	20 53 17.98	2.2063	17 0 26.3	12.146
19	19 2 40.41	2.4970	24 34 27.7	6.623	19	20 55 30.18	2.2003	16 48 15.1	12.227
20	19 5 10.07	2.4915	24 27 45.8	6.773	20	20 57 42.02	2.1943	16 35 59.1	12.306
21	19 7 39.39	2.4859	24 20 54.9	6.922	21	20 59 53.50	2.1884	16 23 38.4	12.384
22	19 10 8.38	2.4803	24 13 55.1	7.071	22	21 2 4.63	2.1825	16 11 13.0	12.461
23	19 12 37.03	2.4746	S. 24 6 46.4	7.218	23	21 4 15.40	2.1766	S. 15 58 43.1	12.536
MONDAY 6.					WEDNESDAY 8.				
0	19 15 5.33	2.4688	S. 23 59 28.9	7.364	0	21 6 25.82	2.1708	S. 15 46 8.7	12.610
1	19 17 33.29	2.4631	23 52 2.7	7.508	1	21 8 35.89	2.1650	15 33 29.9	12.682
2	19 20 0.90	2.4572	23 44 28.0	7.650	2	21 10 45.62	2.1593	15 20 46.9	12.752
3	19 22 28.15	2.4512	23 36 44.7	7.792	3	21 12 55.00	2.1536	15 7 59.7	12.821
4	19 24 55.04	2.4452	23 28 52.9	7.933	4	21 15 4.05	2.1480	14 55 8.4	12.888
5	19 27 21.58	2.4392	23 20 52.8	8.071	5	21 17 12.76	2.1424	14 42 13.1	12.955
6	19 29 47.75	2.4332	23 12 44.4	8.208	6	21 19 21.14	2.1368	14 29 13.8	13.020
7	19 32 13.56	2.4271	23 4 27.9	8.343	7	21 21 29.18	2.1313	14 16 10.7	13.083
8	19 34 39.00	2.4209	22 56 3.2	8.478	8	21 23 36.90	2.1259	14 3 3.8	13.145
9	19 37 4.07	2.4148	22 47 30.5	8.611	9	21 25 44.29	2.1205	13 49 53.3	13.205
10	19 39 28.77	2.4086	22 38 49.9	8.742	10	21 27 51.36	2.1152	13 36 39.2	13.264
11	19 41 53.10	2.4023	22 30 1.5	8.872	11	21 29 58.11	2.1099	13 23 21.6	13.322
12	19 44 17.05	2.3960	22 21 5.3	9.001	12	21 32 4.55	2.1048	13 10 0.6	13.378
13	19 46 40.62	2.3897	22 12 1.4	9.128	13	21 34 10.68	2.0996	12 56 36.3	13.433
14	19 49 3.82	2.3834	22 2 50.0	9.253	14	21 36 16.50	2.0944	12 43 8.7	13.486
15	19 51 26.63	2.3770	21 53 31.1	9.377	15	21 38 22.01	2.0893	12 29 38.0	13.538
16	19 53 49.06	2.3707	21 44 4.8	9.499	16	21 40 27.22	2.0844	12 16 4.2	13.588
17	19 56 11.11	2.3643	21 34 31.2	9.620	17	21 42 32.14	2.0795	12 2 27.4	13.637
18	19 58 32.78	2.3579	21 24 50.4	9.739	18	21 44 36.76	2.0746	11 48 47.7	13.685
19	20 0 54.06	2.3515	21 15 2.5	9.857	19	21 46 41.09	2.0698	11 35 5.2	13.731
20	20 3 14.96	2.3452	21 5 7.5	9.974	20	21 48 45.14	2.0651	11 21 20.0	13.776
21	20 5 35.48	2.3388	20 55 5.6	10.089	21	21 50 48.90	2.0605	11 7 32.1	13.820
22	20 7 55.61	2.3323	20 44 56.8	10.202	22	21 52 52.38	2.0557	10 53 41.6	13.862
23	20 10 15.35	2.3258	20 34 41.3	10.314	23	21 54 55.58	2.0511	10 39 48.7	13.902
24	20 12 34.70	2.3193	S. 20 24 19.1	10.424	24	21 56 58.51	2.0467	S. 10 25 53.4	13.942

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 9.					SATURDAY 11				
0	h m s		° ' "		0	h m s		° ' "	
1	21 56 58.51	2.0467	S. 10 25 53.4	13.948	1	23 31 17.45	1.9091	N. 1 5 14.2	14.412
2	21 59 1.18	2.0423	10 11 55.7	13.980	2	23 33 11.96	1.9079	1 19 38.4	14.394
3	22 1 3.58	2.0378	9 57 55.8	14.017	3	23 35 6.40	1.9068	1 34 1.5	14.376
4	22 3 5.72	2.0335	9 43 53.7	14.053	4	23 37 0.77	1.9057	1 48 23.5	14.357
5	22 5 7.60	2.0293	9 29 49.5	14.087	5	23 38 55.08	1.9047	2 2 44.3	14.337
6	22 7 9.23	2.0252	9 15 43.3	14.120	6	23 40 49.33	1.9037	2 17 3.9	14.316
7	22 9 10.62	2.0211	9 1 35.1	14.152	7	23 42 43.52	1.9028	2 31 22.2	14.293
8	22 11 11.76	2.0169	8 47 25.1	14.182	8	23 44 37.66	1.9018	2 45 39.1	14.270
9	22 13 12.65	2.0129	8 33 13.3	14.211	9	23 46 31.76	1.9012	2 59 54.6	14.247
10	22 15 13.31	2.0091	8 18 59.8	14.239	10	23 48 25.81	1.9004	3 14 8.7	14.222
11	22 17 13.74	2.0052	8 4 44.6	14.266	11	23 50 19.81	1.8998	3 28 21.2	14.196
12	22 19 13.94	2.0014	7 50 27.9	14.291	12	23 52 13.78	1.8992	3 42 32.2	14.169
13	22 21 13.91	1.9977	7 36 9.7	14.315	13	23 54 7.72	1.8987	3 56 41.5	14.142
14	22 23 13.66	1.9941	7 21 50.1	14.338	14	23 56 1.63	1.8982	4 10 49.2	14.113
15	22 25 13.20	1.9905	7 7 29.2	14.359	15	23 57 55.51	1.8978	4 24 55.1	14.083
16	22 27 12.52	1.9869	6 53 7.0	14.379	16	23 59 49.37	1.8976	4 38 59.2	14.052
17	22 29 11.63	1.9835	6 38 43.7	14.398	17	0 1 43.22	1.8973	4 53 1.4	14.021
18	22 31 10.54	1.9802	6 24 19.2	14.417	18	0 3 37.05	1.8971	5 7 1.7	13.989
19	22 33 9.25	1.9768	6 9 53.7	14.433	19	0 5 30.87	1.8969	5 21 0.1	13.957
20	22 35 7.76	1.9736	5 55 27.2	14.449	20	0 7 24.68	1.8968	5 34 56.5	13.923
21	22 37 6.08	1.9704	5 40 59.8	14.465	21	0 9 18.49	1.8968	5 48 50.8	13.887
22	22 39 4.21	1.9673	5 26 31.6	14.477	22	0 11 12.30	1.8968	6 2 42.9	13.851
23	22 41 2.15	1.9643	5 12 2.6	14.488	23	0 13 6.11	1.8969	6 16 32.9	13.814
24	22 42 59.92	1.9613	S. 4 57 33.0	14.499	24	0 14 59.93	1.8972	N. 6 30 20.6	13.776
FRIDAY 10.					SUNDAY 12.				
0	22 44 57.51	1.9584	S. 4 43 2.7	14.509	0	0 16 53.77	1.8974	N. 6 44 6.0	13.738
1	22 46 54.93	1.9556	4 28 31.9	14.518	1	0 18 47.62	1.8976	6 57 49.1	13.698
2	22 48 52.18	1.9528	4 14 0.6	14.525	2	0 20 41.48	1.8979	7 11 29.8	13.658
3	22 50 49.27	1.9501	3 59 28.9	14.531	3	0 22 35.37	1.8983	7 25 8.0	13.617
4	22 52 46.19	1.9474	3 44 56.9	14.536	4	0 24 29.28	1.8988	7 38 43.8	13.575
5	22 54 42.96	1.9449	3 30 24.6	14.540	5	0 26 23.22	1.8993	7 52 17.0	13.532
6	22 56 39.58	1.9424	3 15 52.1	14.543	6	0 28 17.19	1.8998	8 5 47.6	13.488
7	22 58 36.05	1.9400	3 1 19.4	14.545	7	0 30 11.19	1.9004	8 19 15.6	13.444
8	23 0 32.38	1.9377	2 46 46.7	14.545	8	0 32 5.24	1.9012	8 32 40.9	13.398
9	23 2 28.57	1.9354	2 32 14.0	14.545	9	0 33 59.33	1.9018	8 46 3.4	13.352
10	23 4 24.63	1.9332	2 17 41.3	14.544	10	0 35 53.46	1.9026	8 59 23.1	13.304
11	23 6 20.55	1.9310	2 3 8.7	14.542	11	0 37 47.64	1.9033	9 12 39.9	13.257
12	23 8 16.35	1.9289	1 48 36.3	14.538	12	0 39 41.86	1.9041	9 25 53.9	13.208
13	23 10 12.02	1.9269	1 34 4.2	14.533	13	0 41 36.14	1.9052	9 39 4.9	13.158
14	23 12 7.58	1.9250	1 19 32.4	14.527	14	0 43 30.49	1.9062	9 52 12.9	13.108
15	23 14 3.02	1.9230	1 5 1.0	14.520	15	0 45 24.89	1.9073	10 5 17.8	13.056
16	23 15 58.34	1.9212	0 50 30.0	14.512	16	0 47 19.36	1.9084	10 18 19.6	12.994
17	23 17 53.56	1.9195	0 35 59.6	14.503	17	0 49 13.90	1.9095	10 31 18.3	12.932
18	23 19 48.68	1.9178	0 21 29.7	14.493	18	0 51 8.50	1.9107	10 44 13.8	12.868
19	23 21 43.70	1.9162	S. 0 7 0.5	14.482	19	0 53 3.18	1.9120	10 57 6.1	12.803
20	23 23 38.62	1.9147	N. 0 7 28.1	14.470	20	0 54 57.94	1.9133	11 9 55.0	12.738
21	23 25 33.46	1.9132	0 21 55.9	14.457	21	0 56 52.77	1.9146	11 22 40.6	12.674
22	23 27 28.21	1.9117	0 36 22.9	14.443	22	0 58 47.69	1.9160	11 35 22.8	12.610
23	23 29 22.87	1.9103	0 50 49.0	14.428	23	1 0 42.69	1.9174	11 48 1.5	12.546
24	23 31 17.45	1.9091	N. 1 5 14.2	14.412	24	1 2 37.78	1.9189	N. 12 0 36.8	12.482

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 13.					WEDNESDAY 15.				
0	1 2 37.78	1.9189	N. 12 0 36.8	12.358	0	2 37 13.60	2.0347	N. 20 41 30.2	8.865
1	1 4 32.96	1.9205	12 13 8.5	12.498	1	2 39 15.77	2.0377	20 50 19.3	8.771
2	1 6 28.24	1.9221	12 25 36.6	12.438	2	2 41 18.12	2.0407	20 59 2.7	8.676
3	1 8 23.61	1.9237	12 38 1.1	12.378	3	2 43 20.65	2.0438	21 7 40.4	8.580
4	1 10 19.08	1.9254	12 50 21.9	12.316	4	2 45 23.37	2.0468	21 16 12.3	8.484
5	1 12 14.66	1.9272	13 2 39.0	12.253	5	2 47 26.27	2.0498	21 24 38.5	8.388
6	1 14 10.34	1.9288	13 14 52.3	12.190	6	2 49 29.35	2.0528	21 32 58.8	8.290
7	1 16 6.12	1.9307	13 27 1.8	12.127	7	2 51 32.61	2.0559	21 41 13.3	8.192
8	1 18 2.02	1.9326	13 39 7.5	12.064	8	2 53 36.06	2.0590	21 49 21.9	8.093
9	1 19 58.03	1.9345	13 51 9.2	11.996	9	2 55 39.69	2.0621	21 57 24.5	7.993
10	1 21 54.16	1.9365	14 3 7.0	11.930	10	2 57 43.51	2.0652	22 5 21.1	7.893
11	1 23 50.41	1.9384	14 15 0.8	11.862	11	2 59 47.51	2.0682	22 13 11.7	7.792
12	1 25 46.77	1.9404	14 26 50.4	11.793	12	3 1 51.69	2.0713	22 20 56.1	7.690
13	1 27 43.26	1.9425	14 38 36.0	11.726	13	3 3 56.06	2.0743	22 28 34.5	7.588
14	1 29 39.87	1.9446	14 50 17.5	11.657	14	3 6 0.61	2.0773	22 36 6.7	7.486
15	1 31 36.61	1.9467	15 1 54.8	11.587	15	3 8 5.34	2.0804	22 43 32.8	7.383
16	1 33 33.48	1.9489	15 13 27.9	11.516	16	3 10 10.26	2.0835	22 50 52.7	7.279
17	1 35 30.48	1.9512	15 24 56.7	11.444	17	3 12 15.36	2.0865	22 58 6.3	7.174
18	1 37 27.62	1.9534	15 36 21.2	11.372	18	3 14 20.64	2.0896	23 5 13.6	7.069
19	1 39 24.89	1.9557	15 47 41.3	11.300	19	3 16 26.11	2.0927	23 12 14.6	6.964
20	1 41 22.30	1.9581	15 58 57.0	11.224	20	3 18 31.76	2.0957	23 19 9.3	6.858
21	1 43 19.86	1.9605	16 10 8.2	11.150	21	3 20 37.59	2.0986	23 25 57.5	6.750
22	1 45 17.56	1.9628	16 21 15.0	11.075	22	3 22 43.59	2.1016	23 32 39.3	6.643
23	1 47 15.40	1.9653	N. 16 32 17.2	10.999	23	3 24 49.78	2.1047	N. 23 39 14.7	6.535
TUESDAY 14.					THURSDAY 16.				
0	1 49 13.39	1.9678	N. 16 43 14.9	10.922	0	3 26 56.15	2.1076	N. 23 45 43.5	6.426
1	1 51 11.53	1.9703	16 54 7.9	10.844	1	3 29 2.69	2.1105	23 52 5.8	6.317
2	1 53 9.82	1.9728	17 4 56.2	10.766	2	3 31 9.41	2.1135	23 58 21.6	6.207
3	1 55 8.26	1.9753	17 15 39.8	10.687	3	3 33 16.31	2.1164	24 4 30.7	6.097
4	1 57 6.86	1.9779	17 26 18.6	10.608	4	3 35 23.38	2.1192	24 10 33.2	5.986
5	1 59 5.61	1.9805	17 36 52.7	10.528	5	3 37 30.63	2.1222	24 16 29.0	5.874
6	2 1 4.52	1.9832	17 47 21.9	10.446	6	3 39 38.05	2.1251	24 22 18.1	5.762
7	2 3 3.59	1.9858	17 57 46.2	10.363	7	3 41 45.64	2.1279	24 28 0.5	5.650
8	2 5 2.82	1.9886	18 8 5.5	10.281	8	3 43 53.40	2.1308	24 33 36.1	5.538
9	2 7 2.22	1.9913	18 18 19.9	10.198	9	3 46 1.33	2.1336	24 39 5.0	5.424
10	2 9 1.78	1.9940	18 28 29.3	10.114	10	3 48 9.43	2.1363	24 44 27.0	5.309
11	2 11 1.50	1.9968	18 38 33.6	10.030	11	3 50 17.69	2.1390	24 49 42.1	5.194
12	2 13 1.40	1.9997	18 48 32.9	9.945	12	3 52 26.11	2.1417	24 54 50.3	5.079
13	2 15 1.46	2.0024	18 58 27.0	9.858	13	3 54 34.70	2.1445	24 59 51.6	4.964
14	2 17 1.69	2.0053	19 8 15.9	9.771	14	3 56 43.45	2.1471	25 4 46.0	4.848
15	2 19 2.09	2.0082	19 17 59.5	9.683	15	3 58 52.35	2.1498	25 9 33.4	4.731
16	2 21 2.67	2.0111	19 27 37.9	9.596	16	4 1 1.42	2.1524	25 14 13.7	4.613
17	2 23 3.42	2.0139	19 37 11.0	9.507	17	4 3 10.64	2.1549	25 18 47.0	4.496
18	2 25 4.34	2.0168	19 46 38.7	9.417	18	4 5 20.01	2.1574	25 23 13.2	4.378
19	2 27 5.44	2.0198	19 56 1.0	9.327	19	4 7 29.53	2.1600	25 27 32.4	4.260
20	2 29 6.72	2.0228	20 5 17.9	9.236	20	4 9 39.21	2.1625	25 31 44.4	4.141
21	2 31 8.17	2.0257	20 14 29.3	9.144	21	4 11 49.03	2.1648	25 35 49.3	4.022
22	2 33 9.80	2.0287	20 23 35.2	9.052	22	4 13 58.99	2.1672	25 39 47.0	3.901
23	2 35 11.61	2.0317	20 32 35.5	8.958	23	4 16 9.10	2.1696	25 43 37.4	3.780
24	2 37 13.60	2.0347	N. 20 41 30.2	8.865	24	4 18 19.34	2.1719	N. 25 47 20.6	3.660

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 17.					SUNDAY 19.				
0	4 18 19.34	2.1719	N.25 47 20.6	3.660	0	6 4 20.79	2.2258	N.26 17 57.7	2.468
1	4 20 29.73	2.1742	25 50 56.6	3.539	1	6 6 34.30	2.2250	26 15 26.2	2.390
2	4 22 40.25	2.1764	25 54 25.3	3.418	2	6 8 47.79	2.2247	26 12 46.9	2.720
3	4 24 50.90	2.1787	25 57 46.7	3.296	3	6 11 1.26	2.2243	26 9 59.8	2.830
4	4 27 1.69	2.1809	26 1 0.8	3.174	4	6 13 14.71	2.2240	26 7 4.9	2.980
5	4 29 12.61	2.1830	26 4 7.6	3.052	5	6 15 28.14	2.2236	26 4 2.2	3.130
6	4 31 23.65	2.1851	26 7 7.0	2.928	6	6 17 41.54	2.2231	26 0 51.7	3.240
7	4 33 34.82	2.1871	26 9 58.9	2.803	7	6 19 54.91	2.2225	25 57 33.4	3.369
8	4 35 46.10	2.1890	26 12 43.4	2.680	8	6 22 8.24	2.2219	25 54 7.4	3.498
9	4 37 57.50	2.1909	26 15 20.5	2.556	9	6 24 21.54	2.2213	25 50 33.6	3.628
10	4 40 9.01	2.1928	26 17 50.1	2.432	10	6 26 34.80	2.2206	25 46 52.1	3.757
11	4 42 20.64	2.1947	26 20 12.3	2.307	11	6 28 48.01	2.2198	25 43 2.8	3.887
12	4 44 32.38	2.1965	26 22 26.9	2.181	12	6 31 1.17	2.2190	25 39 5.7	4.015
13	4 46 44.22	2.1982	26 24 34.0	2.056	13	6 33 14.29	2.2182	25 35 1.0	4.143
14	4 48 56.17	2.2000	26 26 33.6	1.930	14	6 35 27.35	2.2173	25 30 48.5	4.272
15	4 51 8.22	2.2016	26 28 25.6	1.804	15	6 37 40.36	2.2164	25 26 28.3	4.400
16	4 53 20.36	2.2032	26 30 10.1	1.678	16	6 39 53.32	2.2154	25 22 0.5	4.528
17	4 55 32.60	2.2048	26 31 46.9	1.551	17	6 42 6.21	2.2143	25 17 25.0	4.656
18	4 57 44.93	2.2063	26 33 16.2	1.424	18	6 44 19.04	2.2133	25 12 41.8	4.783
19	4 59 57.35	2.2077	26 34 37.8	1.297	19	6 46 31.81	2.2123	25 7 51.0	4.911
20	5 2 9.85	2.2091	26 35 51.8	1.169	20	6 48 44.51	2.2111	25 2 52.5	5.038
21	5 4 22.44	2.2104	26 36 58.1	1.041	21	6 50 57.14	2.2098	24 57 46.4	5.165
22	5 6 35.10	2.2117	26 37 56.7	0.913	22	6 53 9.69	2.2086	24 52 32.7	5.292
23	5 8 47.84	2.2128	N.26 38 47.7	0.785	23	6 55 22.17	2.2074	N.24 47 11.5	5.418
SATURDAY 18.					MONDAY 20.				
0	5 11 0.64	2.2140	N.26 39 30.9	0.657	0	6 57 34.58	2.2062	N.24 41 42.6	5.544
1	5 13 13.52	2.2152	26 40 6.5	0.528	1	6 59 46.91	2.2048	24 36 6.2	5.669
2	5 15 26.46	2.2162	26 40 34.3	0.399	2	7 1 59.15	2.2033	24 30 22.3	5.794
3	5 17 39.46	2.2172	26 40 54.4	0.270	3	7 4 11.31	2.2019	24 24 30.9	5.919
4	5 19 52.52	2.2182	26 41 6.7	0.141	4	7 6 23.38	2.2005	24 18 32.0	6.043
5	5 22 5.64	2.2191	26 41 11.3	+ 0.012	5	7 8 35.37	2.1991	24 12 25.7	6.168
6	5 24 18.81	2.2198	26 41 8.1	- 0.118	6	7 10 47.27	2.1976	24 6 11.9	6.292
7	5 26 32.02	2.2206	26 40 57.2	0.247	7	7 12 59.08	2.1960	23 59 50.7	6.415
8	5 28 45.28	2.2213	26 40 38.5	0.377	8	7 15 10.79	2.1944	23 53 22.1	6.538
9	5 30 58.58	2.2220	26 40 12.0	0.506	9	7 17 22.41	2.1928	23 46 46.1	6.661
10	5 33 11.92	2.2227	26 39 37.8	0.636	10	7 19 33.93	2.1912	23 40 2.8	6.783
11	5 35 25.30	2.2232	26 38 55.7	0.766	11	7 21 45.35	2.1896	23 33 12.2	6.904
12	5 37 38.70	2.2236	26 38 5.9	0.896	12	7 23 56.68	2.1879	23 26 14.3	7.026
13	5 39 52.13	2.2241	26 37 8.2	1.027	13	7 26 7.90	2.1862	23 19 9.1	7.147
14	5 42 5.59	2.2245	26 36 2.7	1.157	14	7 28 19.02	2.1845	23 11 56.6	7.268
15	5 44 19.07	2.2248	26 34 49.4	1.287	15	7 30 30.04	2.1828	23 4 36.9	7.388
16	5 46 32.57	2.2252	26 33 28.3	1.417	16	7 32 40.95	2.1810	22 57 10.0	7.508
17	5 48 46.09	2.2253	26 31 59.4	1.547	17	7 34 51.76	2.1792	22 49 36.0	7.627
18	5 50 59.61	2.2254	26 30 22.7	1.677	18	7 37 2.46	2.1774	22 41 54.8	7.746
19	5 53 13.14	2.2255	26 28 38.1	1.808	19	7 39 13.05	2.1756	22 34 6.5	7.864
20	5 55 26.67	2.2256	26 26 45.7	1.939	20	7 41 23.53	2.1738	22 26 11.1	7.982
21	5 57 40.21	2.2257	26 24 45.4	2.069	21	7 43 33.90	2.1719	22 18 8.7	8.098
22	5 59 53.75	2.2256	26 22 37.4	2.199	22	7 45 44.16	2.1700	22 9 59.3	8.215
23	6 2 7.28	2.2253	26 20 21.5	2.331	23	7 47 54.30	2.1681	22 1 42.9	8.332
24	6 4 20.79	2.2252	N.26 17 57.7	2.461	24	7 50 4.33	2.1663	N.21 53 19.5	8.448

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 21.					THURSDAY 23.				
0	7 50 4.33	2.1663	N. 21 53 19.5	8.448	0	9 31 57.66	2.0839	N. 13 6 46.8	13.806
1	7 54 14.25	2.1644	21 44 49.2	8.585	1	9 34 2.79	2.0850	12 53 32.1	13.285
2	7 54 24.06	2.1625	21 36 12.0	8.677	2	9 36 7.86	2.0840	12 40 12.6	13.563
3	7 56 33.75	2.1606	21 27 28.0	8.791	3	9 38 12.87	2.0830	12 26 48.5	13.441
4	7 58 43.33	2.1587	21 18 37.1	8.905	4	9 40 17.82	2.0822	12 13 19.7	13.518
5	8 0 52.79	2.1568	21 9 39.4	9.018	5	9 42 22.73	2.0813	11 59 46.4	13.593
6	8 3 2.14	2.1548	21 0 35.0	9.129	6	9 44 27.58	2.0805	11 46 8.6	13.667
7	8 5 11.37	2.1529	20 51 23.9	9.241	7	9 46 32.39	2.0798	11 32 26.4	13.740
8	8 7 20.49	2.1510	20 42 6.1	9.352	8	9 48 37.16	2.0792	11 18 39.8	13.812
9	8 9 29.49	2.1491	20 32 41.6	9.463	9	9 50 41.89	2.0785	11 4 48.9	13.884
10	8 11 38.38	2.1472	20 23 10.5	9.572	10	9 52 46.58	2.0778	10 50 53.7	13.954
11	8 13 47.15	2.1452	20 13 32.9	9.682	11	9 54 51.23	2.0773	10 36 54.4	14.023
12	8 15 55.80	2.1433	20 3 48.7	9.791	12	9 56 55.85	2.0768	10 22 51.0	14.091
13	8 18 4.34	2.1413	19 53 58.0	9.898	13	9 59 0.44	2.0763	10 8 43.5	14.158
14	8 20 12.76	2.1394	19 44 0.9	10.006	14	10 1 5.01	2.0760	9 54 32.0	14.224
15	8 22 21.07	2.1376	19 33 57.3	10.113	15	10 3 9.56	2.0757	9 40 16.6	14.289
16	8 24 29.27	2.1357	19 23 47.4	10.218	16	10 5 14.09	2.0753	9 25 57.3	14.353
17	8 26 37.35	2.1338	19 13 31.1	10.324	17	10 7 18.60	2.0750	9 11 34.2	14.416
18	8 28 45.32	2.1318	19 3 8.5	10.429	18	10 9 23.11	2.0750	8 57 7.4	14.478
19	8 30 53.17	2.1300	18 52 39.6	10.533	19	10 11 27.60	2.0748	8 42 36.9	14.538
20	8 33 0.92	2.1282	18 42 4.6	10.635	20	10 13 32.09	2.0747	8 28 2.8	14.597
21	8 35 8.55	2.1265	18 31 23.4	10.738	21	10 15 36.57	2.0747	8 13 25.2	14.656
22	8 37 16.08	2.1246	18 20 36.0	10.840	22	10 17 41.05	2.0748	7 58 44.1	14.713
23	8 39 23.50	2.1228	N. 18 9 42.6	10.940	23	10 19 45.54	2.0749	N. 7 43 59.6	14.769
WEDNESDAY 22.					FRIDAY 24.				
0	8 41 30.81	2.1209	N. 17 58 43.2	11.040	0	10 21 50.04	2.0731	N. 7 29 11.8	14.824
1	8 43 38.01	2.1192	17 47 37.8	11.140	1	10 23 54.55	2.0733	7 14 20.7	14.877
2	8 45 45.11	2.1174	17 36 26.4	11.239	2	10 25 59.07	2.0735	6 59 26.5	14.929
3	8 47 52.10	2.1157	17 25 9.1	11.337	3	10 28 3.61	2.0739	6 44 29.2	14.981
4	8 49 58.99	2.1140	17 13 45.9	11.435	4	10 30 8.18	2.0763	6 29 28.8	15.031
5	8 52 5.78	2.1123	17 2 16.9	11.532	5	10 32 12.77	2.0768	6 14 25.5	15.079
6	8 54 12.47	2.1107	16 50 42.1	11.628	6	10 34 17.39	2.0773	5 59 19.3	15.127
7	8 56 19.06	2.1090	16 39 1.6	11.722	7	10 36 22.04	2.0778	5 44 10.2	15.174
8	8 58 25.55	2.1074	16 27 15.5	11.816	8	10 38 26.73	2.0785	5 28 58.4	15.219
9	9 0 31.95	2.1058	16 15 23.7	11.909	9	10 40 31.46	2.0793	5 13 43.9	15.262
10	9 2 38.25	2.1043	16 3 26.4	12.002	10	10 42 36.24	2.0801	4 58 26.9	15.304
11	9 4 44.46	2.1028	15 51 23.5	12.095	11	10 44 41.07	2.0808	4 43 7.4	15.346
12	9 6 50.58	2.1013	15 39 15.2	12.187	12	10 46 45.94	2.0817	4 27 45.4	15.387
13	9 8 56.61	2.1008	15 27 1.4	12.274	13	10 48 50.87	2.0827	4 12 21.0	15.423
14	9 11 2.55	2.0993	15 14 42.3	12.363	14	10 50 55.87	2.0838	3 56 54.4	15.462
15	9 13 8.41	2.0979	15 2 17.8	12.452	15	10 53 0.93	2.0849	3 41 25.6	15.498
16	9 15 14.19	2.0965	14 49 48.1	12.539	16	10 55 6.06	2.0861	3 25 54.7	15.533
17	9 17 19.88	2.0953	14 37 13.1	12.626	17	10 57 11.26	2.0873	3 10 21.7	15.567
18	9 19 25.50	2.0940	14 24 33.0	12.711	18	10 59 16.54	2.0887	2 54 46.7	15.599
19	9 21 31.04	2.0927	14 11 47.8	12.796	19	11 1 21.90	2.0900	2 39 9.8	15.629
20	9 23 36.50	2.0914	13 58 57.5	12.880	20	11 3 27.34	2.0915	2 23 31.2	15.658
21	9 25 41.89	2.0898	13 46 2.2	12.965	21	11 5 32.88	2.0931	2 7 50.9	15.686
22	9 27 47.22	2.0882	13 33 1.9	13.045	22	11 7 38.51	2.0946	1 52 8.9	15.713
23	9 29 52.48	2.0870	13 19 56.8	13.126	23	11 9 44.23	2.0962	1 36 25.4	15.738
24	9 31 57.66	2.0859	N. 13 6 46.8	13.206	24	11 11 50.06	2.0980	N. 1 20 40.4	15.762

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 25.					MONDAY 27.				
0	11 11 50.06	2.0980	N. 1 20 40.4	15.762	0	12 55 50.67	2.2618	S. 11 13 29.4	15.006
1	11 13 55.99	2.0998	1 4 54.0	15.783	1	12 58 6.53	2.2668	11 28 28.6	14.998
2	11 16 2.03	2.1016	0 49 6.4	15.803	2	13 0 22.68	2.2718	11 43 24.3	14.898
3	11 18 8.18	2.1035	0 33 17.6	15.822	3	13 2 39.14	2.2768	11 58 16.3	14.896
4	11 20 14.45	2.1055	0 17 27.7	15.841	4	13 4 55.90	2.2819	12 13 4.6	14.772
5	11 22 20.84	2.1076	N. 0 1 36.7	15.858	5	13 7 12.97	2.2871	12 27 48.9	14.705
6	11 24 27.36	2.1098	S. 0 14 15.2	15.873	6	13 9 30.35	2.2923	12 42 29.2	14.657
7	11 26 34.01	2.1120	0 30 8.0	15.886	7	13 11 48.05	2.2977	12 57 5.3	14.567
8	11 28 40.80	2.1143	0 46 1.5	15.898	8	13 14 6.07	2.3030	13 11 37.2	14.496
9	11 30 47.72	2.1166	1 1 55.7	15.908	9	13 16 24.41	2.3083	13 26 4.8	14.423
10	11 32 54.79	2.1190	1 17 50.5	15.917	10	13 18 43.07	2.3137	13 40 27.9	14.347
11	11 35 2.00	2.1215	1 33 45.7	15.923	11	13 21 2.05	2.3191	13 54 46.4	14.269
12	11 37 9.37	2.1241	1 49 41.3	15.929	12	13 23 21.36	2.3246	14 9 0.2	14.190
13	11 39 16.89	2.1267	2 5 37.2	15.933	13	13 25 41.00	2.3301	14 23 9.2	14.109
14	11 41 24.57	2.1294	2 21 33.3	15.936	14	13 28 0.97	2.3356	14 37 13.3	14.026
15	11 43 32.42	2.1322	2 37 29.5	15.937	15	13 30 21.27	2.3412	14 51 12.3	13.940
16	11 45 40.43	2.1350	2 53 25.7	15.937	16	13 32 41.91	2.3468	15 5 6.1	13.853
17	11 47 48.62	2.1380	3 9 21.9	15.935	17	13 35 2.89	2.3524	15 18 54.7	13.765
18	11 49 56.99	2.1410	3 25 17.9	15.931	18	13 37 24.20	2.3581	15 32 37.9	13.674
19	11 52 5.54	2.1440	3 41 13.6	15.925	19	13 39 45.86	2.3638	15 46 15.6	13.581
20	11 54 14.27	2.1471	3 57 8.9	15.918	20	13 42 7.86	2.3695	15 59 47.6	13.487
21	11 56 23.19	2.1503	4 13 3.8	15.910	21	13 44 30.20	2.3753	16 13 14.0	13.391
22	11 58 32.31	2.1536	4 28 58.1	15.899	22	13 46 52.89	2.3810	16 26 34.5	13.292
23	12 0 41.62	2.1569	S. 4 44 51.7	15.887	23	13 49 15.92	2.3867	S. 16 39 49.0	13.191
SUNDAY 26.					TUESDAY 28.				
0	12 2 51.14	2.1603	S. 5 0 44.5	15.873	0	13 51 39.29	2.3924	S. 16 52 57.4	13.089
1	12 5 0.86	2.1638	5 16 36.5	15.858	1	13 54 3.01	2.3982	17 5 59.7	12.995
2	12 7 10.80	2.1674	5 32 27.5	15.841	2	13 56 27.08	2.4041	17 18 55.6	12.899
3	12 9 20.95	2.1709	5 48 17.4	15.822	3	13 58 51.50	2.4099	17 31 45.2	12.772
4	12 11 31.31	2.1746	6 4 6.1	15.802	4	14 1 16.27	2.4157	17 44 28.2	12.662
5	12 13 41.90	2.1784	6 19 53.6	15.779	5	14 3 41.39	2.4215	17 57 4.6	12.550
6	12 15 52.72	2.1823	6 35 39.6	15.754	6	14 6 6.85	2.4273	18 9 34.2	12.437
7	12 18 3.77	2.1862	6 51 24.1	15.729	7	14 8 32.67	2.4332	18 21 57.0	12.322
8	12 20 15.06	2.1901	7 7 7.1	15.702	8	14 10 58.83	2.4389	18 34 12.8	12.204
9	12 22 26.58	2.1941	7 22 48.4	15.673	9	14 13 25.34	2.4447	18 46 21.5	12.086
10	12 24 38.35	2.1982	7 38 27.8	15.641	10	14 15 52.20	2.4506	18 58 23.1	11.966
11	12 26 50.36	2.2023	7 54 5.3	15.608	11	14 18 19.41	2.4565	19 10 17.4	11.843
12	12 29 2.62	2.2065	8 9 40.8	15.574	12	14 20 46.96	2.4624	19 22 4.2	11.718
13	12 31 15.14	2.2108	8 25 14.2	15.538	13	14 23 14.86	2.4682	19 33 43.6	11.592
14	12 33 27.91	2.2151	8 40 45.3	15.499	14	14 25 43.10	2.4739	19 45 15.3	11.464
15	12 35 40.95	2.2195	8 56 14.1	15.459	15	14 28 11.68	2.4797	19 56 39.3	11.335
16	12 37 54.25	2.2239	9 11 40.4	15.417	16	14 30 40.61	2.4854	20 7 55.5	11.205
17	12 40 7.82	2.2285	9 27 4.1	15.373	17	14 33 9.87	2.4909	20 19 3.7	11.070
18	12 42 21.67	2.2331	9 42 25.2	15.328	18	14 35 39.47	2.4962	20 30 3.9	10.936
19	12 44 35.79	2.2377	9 57 43.5	15.281	19	14 38 9.41	2.5018	20 40 56.0	10.799
20	12 46 50.19	2.2424	10 12 58.9	15.232	20	14 40 39.68	2.5073	20 51 39.8	10.661
21	12 49 4.88	2.2472	10 28 11.3	15.181	21	14 43 10.29	2.5128	21 2 15.3	10.522
22	12 51 19.85	2.2519	10 43 20.6	15.128	22	14 45 41.22	2.5183	21 12 42.4	10.380
23	12 53 35.11	2.2568	10 58 26.7	15.073	23	14 48 12.48	2.5237	21 23 0.9	10.237
24	12 55 50.67	2.2618	S. 11 13 29.4	15.016	24	14 50 44.06	2.5290	S. 21 33 10.8	10.092

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 29.					FRIDAY, OCTOBER 1.				
0	14 50 44.06	2.5990	S. 21 33 10.8	10.092	0	16 56 36.61	2.6025	S. 26 26 32.7	1.792
1	14 53 15.96	2.5943	21 43 12.0	9.946					
2	14 55 48.17	2.5895	21 53 4.3	9.798					
3	14 58 20.70	2.5847	22 2 47.7	9.648					
4	15 0 53.54	2.5798	22 12 22.1	9.497					
5	15 3 26.68	2.5748	22 21 47.4	9.345					
6	15 6 0.12	2.5698	22 31 3.5	9.191					
7	15 8 33.86	2.5647	22 40 10.3	9.035					
8	15 11 7.89	2.5596	22 49 7.7	8.878					
9	15 13 42.21	2.5543	22 57 55.7	8.721					
10	15 16 16.81	2.5490	23 6 34.2	8.561					
11	15 18 51.69	2.5437	23 15 3.0	8.400					
12	15 21 26.85	2.5382	23 23 22.2	8.238					
13	15 24 2.27	2.5325	23 31 31.6	8.074					
14	15 26 37.95	2.5268	23 39 31.1	7.908					
15	15 29 13.88	2.5210	23 47 20.6	7.742					
16	15 31 50.07	2.5152	23 55 0.2	7.576					
17	15 34 26.50	2.5091	24 2 29.7	7.408					
18	15 37 3.16	2.5130	24 9 49.1	7.238					
19	15 39 40.06	2.5169	24 16 58.3	7.067					
20	15 42 17.19	2.5206	24 23 57.2	6.895					
21	15 44 54.53	2.5242	24 30 45.7	6.723					
22	15 47 32.09	2.5277	24 37 23.9	6.549					
23	15 50 9.85	2.5309	S. 24 43 51.6	6.374					
THURSDAY 30.					PHASES OF THE MOON.				
0	15 52 47.80	2.5342	S. 24 50 8.8	6.198					
1	15 55 25.95	2.5374	24 56 15.4	6.022					
2	15 58 4.28	2.5403	25 2 11.4	5.844					
3	16 0 42.78	2.5431	25 7 56.7	5.665					
4	16 3 21.45	2.5458	25 13 31.2	5.486					
5	16 6 0.27	2.5483	25 18 55.0	5.307					
6	16 8 39.25	2.5508	25 24 8.0	5.126					
7	16 11 18.37	2.5531	25 29 10.1	4.944					
8	16 13 57.62	2.5553	25 34 1.3	4.762					
9	16 16 37.00	2.5573	25 38 41.5	4.579					
10	16 19 16.49	2.5591	25 43 10.8	4.397					
11	16 21 56.09	2.5608	25 47 29.1	4.213					
12	16 24 35.79	2.5624	25 51 36.3	4.028					
13	16 27 15.58	2.5638	25 55 32.4	3.843					
14	16 29 55.45	2.5651	25 59 17.4	3.658					
15	16 32 35.39	2.5663	26 2 51.3	3.472					
16	16 35 15.40	2.5673	26 6 14.0	3.286					
17	16 37 55.46	2.5680	26 9 25.6	3.100					
18	16 40 35.56	2.5687	26 12 26.0	2.913					
19	16 43 15.70	2.5692	26 15 15.1	2.726					
20	16 45 55.87	2.5696	26 17 53.1	2.539					
21	16 48 36.05	2.5698	26 20 19.8	2.352					
22	16 51 16.24	2.5698	26 22 35.3	2.165					
23	16 53 56.43	2.5697	26 24 39.6	1.978					
24	16 56 36.61	2.5695	S. 26 26 32.7	1.792					

PHASES OF THE MOON.

		d	h	m
☾	First Quarter	Sep	3	11 13.2
☾	Full Moon		10	14 11.8
☾	Last Quarter		18	14 50.7
●	New Moon		26	1 46.4

		d	h
☾	Perigee	Sept.	1 10.2
☾	Apogee		16 16.2
☾	Perigee		28 12.4

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
1	SUN W.	57 19 10	2567	58 58 50	2568	60 38 29	2568	62 18 8	2569
	MARS W.	32 31 53	2514	34 12 47	2509	35 53 48	2505	37 34 54	2502
	Antares E.	31 47 15	2256	30 0 11	2256	28 13 7	2257	26 26 4	2258
	α Aquilæ E.	87 15 5	2869	85 42 6	2871	84 9 10	2876	82 36 20	2881
2	SUN W.	70 36 2	2576	72 15 30	2577	73 54 56	2580	75 34 19	2582
	MARS W.	46 1 2	2498	47 42 18	2499	49 23 33	2499	51 4 47	2500
	Spica W.	28 26 43	2289	30 12 59	2288	31 59 16	2289	33 45 32	2289
	α Aquilæ E.	74 54 34	2931	73 22 54	2945	71 51 33	2962	70 20 32	2979
	Fomalhaut E.	99 0 2	2645	97 22 8	2644	95 44 13	2643	94 6 17	2644
3	SUN W.	83 50 18	2597	85 29 17	2601	87 8 11	2604	88 47 1	2608
	MARS W.	59 30 27	2510	61 11 26	2513	62 52 21	2516	64 33 12	2519
	Spica W.	42 36 33	2296	44 22 38	2299	46 8 39	2302	47 54 36	2304
	α Aquilæ E.	62 51 50	3100	61 23 40	3131	59 56 8	3165	58 29 17	3202
	Fomalhaut E.	85 57 12	2660	84 19 38	2665	82 42 11	2672	81 4 53	2678
	α Pegasi E.	107 33 49	2462	105 51 42	2462	104 9 36	2463	102 27 31	2464
4	SUN W.	96 59 47	2629	98 38 3	2633	100 16 13	2638	101 54 17	2643
	MARS W.	72 56 20	2537	74 5 42	2540	76 16 59	2545	77 57 10	2549
	Spica W.	56 43 15	2321	58 28 44	2325	60 14 7	2328	61 59 25	2333
	SATURN W.	24 34 8	2504	26 15 16	2487	27 56 47	2475	29 38 35	2463
	Fomalhaut E.	73 1 8	2722	71 25 5	2740	69 49 18	2754	68 13 50	2769
	α Pegasi E.	93 57 40	2476	92 15 53	2480	90 34 12	2484	88 52 36	2489
5	SUN W.	110 2 54	2669	111 40 16	2674	113 17 31	2680	114 54 37	2686
	MARS W.	86 16 30	2573	87 56 2	2578	89 35 27	2584	91 14 44	2589
	Spica W.	70 44 22	2355	72 29 2	2359	74 13 35	2364	75 58 1	2369
	SATURN W.	38 10 1	2445	39 52 32	2445	41 35 3	2445	43 17 34	2446
	Antares W.	24 53 43	2348	26 38 33	2353	28 23 15	2358	30 7 50	2364
	Fomalhaut E.	60 21 59	2866	58 48 56	2890	57 16 24	2916	55 44 26	2945
	α Pegasi E.	80 26 23	2517	78 45 33	2524	77 4 53	2532	75 24 24	2539
6	SUN W.	122 58 13	2716	124 34 31	2724	126 10 39	2731	127 46 38	2738
	MARS W.	99 29 16	2618	101 7 46	2625	102 46 7	2631	104 24 20	2638
	Spica W.	84 38 19	2396	86 21 59	2403	88 5 30	2408	89 48 53	2414
	SATURN W.	51 49 31	2458	53 31 43	2462	55 13 49	2466	56 55 50	2471
	Antares W.	38 48 50	2391	40 32 38	2396	42 16 18	2402	43 59 50	2408
	Fomalhaut E.	48 14 45	3133	46 47 16	3183	45 20 47	3237	43 55 22	3298
	α Pegasi E.	67 4 54	2587	65 25 41	2598	63 46 43	2610	62 8 2	2623
	α Arietis E.	109 7 40	2408	107 24 16	2412	105 40 59	2418	103 57 50	2424
7	Spica W.	98 23 36	2447	100 6 4	2453	101 48 23	2460	103 30 32	2467
	SATURN W.	65 24 11	2497	67 5 29	2503	68 46 38	2509	70 27 39	2516
	Antares W.	52 35 16	2441	54 17 53	2447	56 0 21	2454	57 42 39	2462
	α Pegasi E.	53 59 20	2701	52 22 42	2720	50 46 29	2741	49 10 43	2763
	α Arietis E.	95 24 16	2455	93 42 0	2462	91 59 54	2470	90 17 58	2477
8	SATURN W.	78 50 20	2551	80 30 22	2559	82 10 14	2567	83 49 54	2573
	Antares W.	66 11 32	2499	67 52 47	2507	69 33 50	2515	71 14 42	2524
	α Arietis E.	81 50 52	2515	80 9 59	2523	78 29 18	2531	76 48 48	2540
	Aldebaran E.	113 57 2	2575	112 17 33	2581	110 38 12	2588	108 59 0	2594

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
1	SUN	W.	63 57 46	2569	65 37 23	2571	67 16 58	2572	68 56 31	2574
	MARS	W.	39 16 4	2500	40 57 17	2489	42 38 31	2499	44 19 46	2498
	Antares	E.	24 39 2	2258	22 52 1	2260	21 5 2	2261	19 18 5	2262
	α Aquilæ	E.	81 3 37	2888	79 31 3	2897	77 58 40	2907	76 26 30	2918
2	SUN	W.	77 13 39	2585	78 52 55	2588	80 32 7	2591	82 11 15	2594
	MARS	W.	52 46 0	2502	54 27 11	2504	56 8 19	2505	57 49 25	2508
	Spica	W.	35 31 48	2290	37 18 2	2291	39 4 15	2293	40 50 25	2294
	α Aquilæ	E.	68 49 53	2999	67 19 39	3021	65 49 52	3045	64 20 35	3071
	Fomalhaut	E.	92 28 22	2646	90 50 29	2648	89 12 39	2651	87 34 53	2655
3	SUN	W.	90 25 45	2612	92 4 24	2616	93 42 57	2620	95 21 25	2624
	MARS	W.	66 13 59	2522	67 54 41	2525	69 35 19	2529	71 15 52	2533
	Spica	W.	49 40 29	2307	51 26 18	2311	53 12 2	2314	54 57 41	2317
	α Aquilæ	E.	57 3 10	3243	55 37 52	3288	54 13 27	3337	52 49 58	3391
	Fomalhaut	E.	79 27 44	2687	77 50 46	2695	76 14 0	2705	74 37 27	2716
	α Pegasi	E.	100 45 27	2466	99 3 26	2467	97 21 27	2470	95 39 32	2472
4	SUN	W.	103 32 14	2648	105 10 4	2652	106 47 48	2657	108 25 25	2663
	MARS	W.	79 37 15	2533	81 17 14	2559	82 57 6	2564	84 36 51	2568
	Spica	W.	63 44 37	2337	65 29 43	2342	67 14 42	2346	68 59 35	2350
	SATURN	W.	31 20 37	2458	33 2 49	2453	34 45 8	2449	36 27 33	2447
	Fomalhaut	E.	66 38 41	2785	65 3 54	2803	63 29 30	2822	61 55 31	2843
	α Pegasi	E.	87 11 7	2493	85 29 44	2499	83 48 29	2504	82 7 22	2510
5	SUN	W.	116 31 37	2691	118 8 29	2698	119 45 12	2704	121 21 47	2710
	MARS	W.	92 53 54	2595	94 32 56	2600	96 11 51	2605	97 50 38	2612
	Spica	W.	77 42 20	2375	79 26 31	2380	81 10 35	2385	82 54 31	2391
	SATURN	W.	45 0 3	2448	46 42 30	2450	48 24 54	2452	50 7 15	2455
	Antares	W.	31 52 17	2363	33 36 37	2374	35 20 49	2379	37 4 54	2385
	Fomalhaut	E.	54 13 4	2977	52 42 22	3010	51 12 22	3047	49 43 8	3089
	α Pegasi	E.	73 44 5	2548	72 3 58	2556	70 24 3	2566	68 44 22	2576
6	SUN	W.	129 22 28	2745	130 58 8	2753	132 33 38	2760	134 8 58	2769
	MARS	W.	106 2 23	2645	107 40 17	2652	109 18 2	2659	110 55 37	2666
	Spica	W.	91 32 8	2420	93 15 14	2427	94 58 10	2433	96 40 58	2440
	SATURN	W.	58 37 44	2475	60 19 32	2481	62 1 12	2486	63 42 45	2491
	Antares	W.	45 43 13	2414	47 26 28	2421	49 9 33	2427	50 52 29	2433
	Fomalhaut	E.	42 31 8	3365	41 8 11	3439	39 46 39	3523	38 26 40	3615
	α Pegasi	E.	60 29 38	2637	58 51 33	2651	57 13 47	2666	55 36 22	2684
	α Arietis	E.	102 14 50	2430	100 31 58	2436	98 49 15	2443	97 6 41	2449
7	Spica	W.	105 12 31	2475	106 54 19	2482	108 35 57	2490	110 17 24	2498
	SATURN	W.	72 8 30	2522	73 49 12	2529	75 29 45	2536	77 10 8	2544
	Antares	W.	59 24 46	2469	61 6 43	2476	62 48 30	2484	64 30 6	2491
	α Pegasi	E.	47 35 27	2787	46 0 42	2814	44 26 32	2842	42 52 59	2873
	α Arietis	E.	88 36 12	2484	86 54 36	2492	85 13 11	2499	83 31 56	2507
8	SATURN	W.	85 29 23	2554	87 8 40	2592	88 47 46	2601	90 26 40	2610
	Antares	W.	72 55 22	2533	74 35 50	2540	76 16 7	2549	77 56 12	2559
	α Arietis	E.	75 8 30	2548	73 28 24	2558	71 48 31	2566	70 8 50	2576
	Aldebaran	E.	107 19 57	2601	105 41 4	2609	104 2 21	2617	102 23 49	2625

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
9	SATURN W.	92 5 21	2619	93 43 50	2620	95 22 6	2638	97 0 9	2648
	Antares W.	79 36 4	2567	81 15 44	2577	82 55 11	2585	84 34 26	2596
	α Arietis E.	68 29 22	2585	66 50 7	2595	65 11 5	2604	63 32 16	2615
	Aldebaran E.	100 45 28	2633	99 7 18	2642	97 29 20	2651	95 51 34	2660
10	SATURN W.	105 7 3	2699	106 43 44	2710	108 20 11	2721	109 56 23	2732
	Antares W.	92 47 20	2644	94 25 15	2653	96 2 56	2665	97 40 23	2675
	α Aquilæ W.	46 35 56	2699	47 48 16	2703	49 1 33	2713	50 15 41	2727
	α Arietis E.	55 21 43	2668	53 44 20	2679	52 7 12	2690	50 30 19	2701
	Aldebaran E.	87 45 52	2708	86 9 23	2719	84 33 8	2729	82 57 7	2741
11	Antares W.	105 44 8	2728	107 20 11	2739	108 55 59	2750	110 31 33	2760
	α Aquilæ W.	56 36 28	2649	57 54 10	2657	59 12 15	2669	60 30 40	2693
	α Arietis E.	42 29 50	2763	40 54 34	2776	39 19 35	2790	37 44 54	2803
	Aldebaran E.	75 0 41	2797	73 26 9	2808	71 51 52	2821	70 17 51	2832
	Pollux E.	117 11 9	2753	115 35 39	2763	114 0 22	2773	112 25 19	2783
12	α Aquilæ W.	67 6 20	3543	68 25 57	3558	69 45 39	3574	71 5 26	3588
	Fomalhaut W.	42 8 16	3722	43 24 40	3682	44 41 46	3647	45 59 30	3615
	Aldebaran E.	62 31 45	2896	60 59 21	2909	59 27 14	2923	57 55 24	2936
	Pollux E.	104 33 24	2835	102 59 42	2845	101 26 13	2855	99 52 57	2866
13	α Aquilæ W.	77 44 36	3535	79 4 22	3537	80 24 5	3542	81 43 43	3545
	Fomalhaut W.	52 35 22	3509	53 55 36	3496	55 16 5	3484	56 36 47	3474
	α Pegasi W.	29 59 55	3608	31 18 21	3558	32 37 41	3515	33 57 48	3480
	Aldebaran E.	50 20 35	3007	48 50 31	3022	47 20 46	3038	45 51 20	3054
	Pollux E.	92 9 58	2917	90 38 1	2927	89 6 16	2937	87 34 44	2946
14	α Aquilæ W.	88 20 27	3578	89 39 25	3586	90 58 15	3594	92 16 56	3603
	Fomalhaut W.	63 22 37	3442	64 44 6	3439	66 5 38	3437	67 27 13	3434
	α Pegasi W.	40 46 47	3363	42 9 46	3349	43 33 1	3337	44 56 30	3327
	Aldebaran E.	38 29 19	3143	37 2 2	3163	35 35 9	3186	34 8 43	3209
	Pollux E.	79 59 57	2991	78 29 33	3000	76 59 20	3008	75 29 17	3016
	VENUS E.	104 6 33	3415	102 44 33	3423	101 22 43	3433	100 1 4	3441
	Regulus E.	116 56 8	2976	115 25 25	2984	113 54 52	2992	112 24 29	2999
	SUN E.	140 19 10	3356	138 56 3	3364	137 33 5	3372	136 10 16	3379
15	α Aquilæ W.	98 47 45	3654	100 5 21	3666	101 22 44	3678	102 39 54	3691
	Fomalhaut W.	74 15 32	3431	75 37 13	3432	76 58 53	3433	78 20 32	3433
	α Pegasi W.	51 56 22	3293	53 20 42	3288	54 45 7	3285	56 9 36	3282
	Pollux E.	68 1 25	3052	66 32 17	3058	65 3 16	3065	63 34 23	3070
	VENUS E.	93 15 4	3480	91 54 17	3487	90 33 38	3492	89 13 5	3498
	Regulus E.	104 54 48	3033	103 25 16	3039	101 55 51	3044	100 26 33	3049
	SUN E.	129 18 13	3413	127 56 11	3419	126 34 16	3424	125 12 27	3430
16	Fomalhaut W.	85 8 31	3440	86 30 2	3442	87 51 31	3444	89 12 58	3445
	α Pegasi W.	63 12 53	3269	64 37 41	3266	66 2 32	3264	67 27 26	3262
	α Arietis W.	19 37 5	3194	21 3 21	3183	22 29 50	3173	23 56 32	3163
	Pollux E.	56 11 35	3094	54 43 18	3098	53 15 6	3101	51 46 58	3105
	VENUS E.	82 31 50	3521	81 11 49	3524	79 51 51	3527	78 31 57	3529
	Regulus E.	93 1 25	3069	91 32 37	3071	90 3 52	3073	88 35 10	3076
	SUN E.	118 24 42	3450	117 3 22	3453	115 42 5	3455	114 20 51	3456

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
9	SATURN W.	98 37 59	2657	100 15 36	2668	101 52 59	2678	103 30 8	2689
	Antares W.	86 13 27	2605	87 52 15	2615	89 30 50	2624	91 9 12	2635
	α Arietis E.	61 53 41	2625	60 15 20	2635	58 37 13	2646	56 59 21	2657
	Aldebaran E.	94 14 0	2669	92 36 39	2678	90 59 30	2688	89 22 34	2698
10	SATURN W.	111 32 20	2743	113 8 3	2755	114 43 30	2766	116 18 42	2779
	Antares W.	99 17 36	2686	100 54 35	2696	102 31 20	2707	104 7 51	2717
	α Aquilæ W.	51 30 36	2767	52 46 13	2734	54 2 26	2701	55 19 12	2713
	α Arietis E.	48 53 41	2713	47 17 19	2725	45 41 13	2738	44 5 23	2750
	Aldebaran E.	81 21 21	2751	79 45 49	2762	78 10 31	2773	76 35 28	2785
11	Antares W.	112 6 53	2771	113 41 59	2782	115 16 50	2793	116 51 27	2803
	α Aquilæ W.	61 49 22	2578	63 8 20	2567	64 27 30	2557	65 46 51	2550
	α Arietis E.	36 10 30	2818	34 36 25	2832	33 2 39	2848	31 29 13	2863
	Aldebaran E.	68 44 5	2845	67 10 35	2858	65 37 22	2870	64 4 25	2883
	Pollux E.	110 50 29	2793	109 15 52	2804	107 41 29	2815	106 7 20	2825
12	α Aquilæ W.	72 25 15	2530	73 45 6	2530	75 4 57	2531	76 24 47	2532
	Fomalhaut W.	47 17 48	2587	48 36 36	2565	49 55 49	2544	51 15 25	2535
	Aldebaran E.	56 23 51	2930	54 52 35	2964	53 21 37	2977	51 50 57	2993
	Pollux E.	98 19 55	2876	96 47 6	2887	95 14 31	2897	93 42 8	2907
13	α Aquilæ W.	83 3 17	2551	84 22 45	2557	85 42 6	2564	87 1 20	2570
	Fomalhaut W.	57 57 40	2465	59 18 43	2457	60 39 55	2452	62 1 13	2446
	α Pegasi W.	35 18 35	2448	36 39 57	2422	38 1 49	2399	39 24 7	2379
	Aldebaran E.	44 22 14	2970	42 53 28	2987	41 25 3	2995	39 57 0	3014
	Pollux E.	86 3 23	2955	84 32 14	2965	83 1 17	2973	81 30 31	2983
14	α Aquilæ W.	93 35 27	2612	94 53 48	2623	96 11 58	2633	97 29 57	2643
	Fomalhaut W.	68 48 51	2433	70 10 30	2432	71 32 10	2431	72 53 51	2431
	α Pegasi W.	46 20 10	2379	47 44 0	2370	49 8 0	2363	50 32 8	2358
	Aldebaran E.	32 42 45	2325	31 17 17	2364	29 52 23	2394	28 28 5	2390
	Pollux E.	73 59 24	2924	72 29 41	2931	71 0 7	2939	69 30 42	2945
	VENUS E.	98 39 34	2450	97 18 14	2457	95 57 2	2465	94 35 59	2472
	Regulus E.	110 54 15	2907	109 24 11	2914	107 54 15	2921	106 24 28	2926
	SUN E.	134 47 35	2386	133 25 3	2393	132 2 39	2400	130 40 22	2407
15	α Aquilæ W.	103 56 51	2704	105 13 34	2718	106 30 2	2731	107 46 16	2746
	Fomalhaut W.	79 42 11	2435	81 3 48	2436	82 25 24	2438	83 46 58	2438
	α Pegasi W.	57 34 9	2379	58 58 45	2376	60 23 25	2373	61 48 8	2371
	Pollux E.	62 5 37	2975	60 36 57	2981	59 8 24	2986	57 39 57	2990
	VENUS E.	87 52 39	2504	86 32 19	2508	85 12 4	2514	83 51 55	2517
	Regulus E.	98 57 21	2953	97 28 14	2958	95 59 13	2962	94 30 17	2965
	SUN E.	123 50 44	2435	122 29 7	2438	121 7 34	2443	119 46 6	2446
16	Fomalhaut W.	90 34 24	2446	91 55 48	2448	93 17 10	2450	94 38 30	2452
	α Pegasi W.	68 52 22	2399	70 17 21	2397	71 42 23	2394	73 7 28	2392
	α Arietis W.	25 23 26	2154	26 50 30	2148	28 17 42	2141	29 45 2	2134
	Pollux E.	50 18 54	29107	48 50 53	29110	47 22 56	29113	45 55 2	29114
	VENUS E.	77 12 5	2531	75 52 15	2533	74 32 27	2533	73 12 39	2534
	Regulus E.	87 6 31	2977	85 37 53	2978	84 9 17	2978	82 40 41	2978
	SUN E.	112 59 38	2458	111 38 27	2459	110 17 17	2460	108 56 8	2460

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
17	Fomalhaut W.	95 59 48	3454	97 21 4	3455	98 42 18	3456	100 3 31	3459
	α Pegasi W.	74 32 36	3248	75 57 48	3246	77 23 3	3242	78 48 22	3238
	α Arietis W.	31 12 30	3129	32 40 4	3124	34 7 44	3119	35 35 30	3114
	Pollux E.	44 27 10	3116	42 59 20	3118	41 31 32	3119	40 3 46	3120
	VENUS E.	71 52 52	3533	70 33 4	3533	69 13 16	3532	67 53 27	3529
	Regulus E.	81 12 5	3078	79 43 29	3078	78 14 52	3076	76 46 13	3074
	SUN E.	107 34 59	3460	106 13 50	3458	104 52 39	3457	103 31 27	3454
18	α Pegasi W.	85 56 7	3217	87 21 56	3212	88 47 51	3207	90 13 52	3201
	α Arietis W.	42 55 56	3086	44 24 23	3080	45 52 57	3073	47 21 39	3066
	Pollux E.	32 45 15	3126	31 17 37	3128	29 50 1	3130	28 22 28	3133
	VENUS E.	61 13 37	3513	59 53 27	3507	58 33 11	3502	57 12 49	3497
	Regulus E.	69 22 15	3058	67 53 14	3054	66 24 8	3049	64 54 56	3043
	SUN E.	96 44 40	3438	95 23 6	3432	94 1 26	3427	92 39 40	3420
19	α Pegasi W.	97 25 45	3169	98 52 31	3163	100 19 25	3155	101 46 28	3147
	α Arietis W.	54 47 29	3026	56 17 10	3017	57 47 2	3006	59 17 7	2997
	Aldebaran W.	24 4 8	3388	25 26 38	3340	26 50 3	3298	28 14 17	3259
	VENUS E.	50 29 10	3459	49 8 0	3450	47 46 40	3441	46 25 10	3431
	Regulus E.	57 27 1	3009	55 56 59	3001	54 26 47	2992	52 56 24	2983
	SUN E.	85 48 53	3383	84 26 17	3373	83 3 30	3364	81 40 32	3354
20	α Arietis W.	66 50 48	2940	68 22 16	2928	69 53 59	2916	71 25 58	2903
	Aldebaran W.	35 25 39	3109	36 53 38	3084	38 22 7	3060	39 51 5	3037
	VENUS E.	39 34 39	3375	38 11 54	3362	36 48 54	3350	35 25 40	3336
	Regulus E.	45 21 27	2931	43 49 47	2920	42 17 53	2908	40 45 44	2896
	SUN E.	74 42 41	3298	73 18 27	3284	71 53 57	3271	70 29 12	3258
21	α Arietis W.	79 10 9	2833	80 43 54	2818	82 17 58	2803	83 52 22	2788
	Aldebaran W.	47 22 47	2931	48 54 26	2912	50 26 30	2892	51 58 59	2873
	SUN E.	63 21 21	3186	61 54 55	3170	60 28 10	3155	59 1 7	3138
22	α Arietis W.	91 49 25	2709	93 25 53	2692	95 2 43	2676	96 39 55	2660
	Aldebaran W.	59 47 39	2776	61 22 38	2758	62 58 1	2738	64 33 50	2720
	SUN E.	51 40 57	3057	50 11 55	3040	48 42 32	3023	47 12 48	3007
23	Aldebaran W.	72 39 3	2629	74 17 19	2610	75 56 0	2593	77 35 5	2575
	Pollux W.	30 19 11	2637	31 57 16	2612	33 35 54	2591	35 15 2	2569
	SUN E.	39 38 59	2924	38 7 11	2909	36 35 4	2894	35 2 37	2879
28	SUN W.	26 44 49	2489	28 26 17	2482	30 7 55	2477	31 49 41	2473
	Antares E.	36 17 45	2129	34 27 30	2128	32 37 13	2128	30 46 56	2128
	α Aquilæ E.	91 6 25	2732	89 30 27	2732	87 54 29	2732	86 18 32	2735
29	SUN W.	40 19 22	2469	42 1 19	2470	43 43 14	2472	45 25 6	2476
	α Aquilæ E.	78 20 26	2774	76 45 24	2787	75 10 39	2801	73 36 13	2818
	Fomalhaut E.	102 47 41	2530	101 7 10	2528	99 26 36	2528	97 46 2	2529
30	SUN W.	53 53 2	2499	55 34 16	2506	57 15 21	2512	58 56 17	2520
	α Aquilæ E.	65 50 19	2933	64 18 42	2962	62 47 42	2996	61 17 24	3031
	Fomalhaut E.	89 24 2	2551	87 43 59	2559	86 4 7	2566	84 24 26	2576
	α Pegasi E.	111 2 11	2361	109 17 40	2363	107 33 12	2366	105 48 49	2371

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
17	Fomalhaut W.	101 24 41	3461	102 45 49	3463	104 6 55	3464	105 27 59	3466
	α Pegasi W.	80 13 46	3235	81 39 14	3231	83 4 46	3226	84 30 24	3222
	α Arietis W.	37 3 22	3110	38 31 20	3104	39 59 25	3098	41 27 37	3092
	Pollux E.	38 36 1	3122	37 8 18	3123	35 40 36	3124	34 12 55	3124
	VENUS E.	66 33 35	3527	65 13 41	3524	63 53 43	3521	62 33 42	3517
	Regulus E.	75 17 32	3072	73 48 48	3069	72 20 1	3066	70 51 10	3063
	SUN E.	102 10 12	3453	100 48 55	3449	99 27 34	3446	98 6 9	3442
18	α Pegasi W.	91 40 0	3195	93 6 15	3189	94 32 37	3183	95 59 7	3176
	α Arietis W.	48 50 30	3059	50 19 30	3052	51 48 39	3043	53 17 59	3034
	Pollux E.	26 54 59	3138	25 27 35	3143	24 0 18	3151	22 33 10	3160
	VENUS E.	55 52 21	3489	54 31 45	3483	53 11 2	3475	51 50 10	3468
	Regulus E.	63 25 37	3038	61 56 11	3030	60 26 36	3024	58 56 53	3017
	SUN E.	91 17 46	3414	89 55 45	3408	88 33 37	3400	87 11 20	3391
19	α Pegasi W.	103 13 41	3139	104 41 3	3132	106 8 34	3124	107 36 15	3116
	α Arietis W.	60 47 24	2986	62 17 54	2975	63 48 38	2964	65 19 36	2953
	Aldebaran W.	29 39 17	3224	31 4 58	3192	32 31 17	3169	33 58 11	3134
	VENUS E.	45 3 28	3421	43 41 35	3409	42 19 29	3399	40 57 11	3386
	Regulus E.	51 25 50	2973	49 55 4	2963	48 24 5	2953	46 52 53	2942
	SUN E.	80 17 23	3344	78 54 2	3332	77 30 28	3321	76 6 41	3310
20	α Arietis W.	72 58 13	2890	74 30 45	2876	76 3 35	2862	77 36 43	2848
	Aldebaran W.	41 20 32	3015	42 50 26	2993	44 20 47	2973	45 51 34	2952
	VENUS E.	34 2 10	3323	32 38 25	3310	31 14 25	3296	29 50 9	3282
	Regulus E.	39 13 20	2883	37 40 40	2871	36 7 44	2858	34 34 31	2845
	SUN E.	69 4 11	3244	67 38 54	3230	66 13 20	3215	64 47 29	3201
21	α Arietis W.	85 27 5	2772	87 2 9	2757	88 37 33	2741	90 13 18	2725
	Aldebaran W.	53 31 53	2853	55 5 12	2834	56 38 56	2815	58 13 5	2795
	SUN E.	57 33 44	3123	56 6 2	3106	54 38 0	3091	53 9 39	3073
22	α Arietis W.	98 17 29	2643	99 55 25	2626	101 33 44	2610	103 12 25	2593
	Aldebaran W.	66 10 3	2701	67 46 41	2683	69 23 44	2665	71 1 11	2646
	SUN E.	45 42 44	2990	44 12 19	2973	42 41 33	2957	41 10 26	2941
23	Aldebaran W.	79 14 34	2558	80 54 27	2541	82 34 43	2524	84 15 23	2508
	Pollux W.	36 54 39	2548	38 34 46	2527	40 15 21	2508	41 56 23	2489
	SUN E.	33 29 51	2865	31 56 47	2851	30 23 25	2838	28 49 46	2826
28	SUN W.	33 31 32	2470	35 13 27	2468	36 55 25	2467	38 37 24	2468
	Antares E.	28 56 39	2129	27 6 24	2130	25 16 11	2132	23 26 1	2134
	α Aquilæ E.	84 42 39	2740	83 6 52	2745	81 31 12	2753	79 55 43	2763
29	SUN W.	47 6 53	2480	48 48 35	2484	50 30 11	2489	52 11 40	2494
	α Aquilæ E.	72 2 9	2337	70 28 29	2357	68 55 15	2380	67 22 31	2395
	Fomalhaut E.	96 5 29	2531	94 24 59	2534	92 44 33	2539	91 4 14	2544
30	SUN W.	60 37 2	2527	62 17 37	2535	63 58 2	2543	65 38 15	2552
	α Aquilæ E.	59 47 50	2370	58 19 4	2313	56 51 10	2358	55 24 11	2399
	Fomalhaut E.	82 44 58	2587	81 5 45	2598	79 26 47	2610	77 48 6	2624
	α Pegasi E.	104 4 32	2375	102 20 22	2380	100 36 19	2386	98 52 24	2393

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sideral Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
Frid.	1	^h 12 ^m 31 ^s 26.03	9.066	S. 3 23 41.6	-58.22	16 1.56	64.39	^m 10 26.98	0.790
Sat.	2	12 35 3.72	9.078	3 46 57.8	58.12	16 1.84	64.44	10 45.80	0.778
SUN.	3	12 38 41.70	9.090	4 10 11.2	58.00	16 2.12	64.49	11 4.31	0.765
Mon.	4	12 42 20.02	9.104	4 33 21.6	-57.86	16 2.41	64.54	11 22.50	0.751
Tues.	5	12 45 58.68	9.118	4 56 28.5	57.71	16 2.69	64.59	11 40.34	0.736
Wed.	6	12 49 37.70	9.134	5 19 31.7	57.55	16 2.97	64.65	11 57.83	0.720
Thur.	7	12 53 17.10	9.150	5 42 30.6	-57.37	16 3.25	64.71	12 14.93	0.704
Frid.	8	12 56 56.92	9.168	6 5 25.2	57.17	16 3.53	64.77	12 31.62	0.686
Sat.	9	13 0 37.16	9.186	6 28 14.9	56.96	16 3.81	64.84	12 47.89	0.668
SUN.	10	13 4 17.86	9.206	6 50 59.4	-56.74	16 4.09	64.91	13 3.70	0.649
Mon.	11	13 7 59.03	9.226	7 13 38.5	56.51	16 4.37	64.98	13 19.04	0.629
Tues.	12	13 11 40.70	9.247	7 36 11.7	56.26	16 4.64	65.05	13 33.88	0.608
Wed.	13	13 15 22.89	9.269	7 58 38.7	-55.99	16 4.91	65.13	13 48.21	0.586
Thur.	14	13 19 5.62	9.291	8 20 59.1	55.71	16 5.18	65.21	14 1.99	0.563
Frid.	15	13 22 48.92	9.316	8 43 12.6	55.41	16 5.45	65.29	14 15.22	0.539
Sat.	16	13 26 32.80	9.341	9 5 18.8	-55.09	16 5.72	65.37	14 27.86	0.514
SUN.	17	13 30 17.28	9.366	9 27 17.3	54.77	16 5.99	65.46	14 39.90	0.489
Mon.	18	13 34 2.38	9.393	9 49 7.7	54.43	16 6.25	65.55	14 51.32	0.462
Tues.	19	13 37 48.13	9.420	10 10 49.7	-54.07	16 6.52	65.64	15 2.09	0.435
Wed.	20	13 41 34.53	9.448	10 32 22.8	53.69	16 6.78	65.73	15 12.22	0.408
Thur.	21	13 45 21.61	9.476	10 53 46.6	53.29	16 7.04	65.83	15 21.67	0.380
Frid.	22	13 49 9.37	9.505	11 15 0.8	-52.88	16 7.30	65.93	15 30.44	0.351
Sat.	23	13 52 57.83	9.534	11 36 4.8	52.45	16 7.56	66.03	15 38.52	0.322
SUN.	24	13 56 47.00	9.564	11 56 58.3	52.00	16 7.82	66.13	15 45.88	0.292
Mon.	25	14 0 36.89	9.594	12 17 40.8	-51.54	16 8.09	66.24	15 52.52	0.262
Tues.	26	14 4 27.51	9.625	12 38 12.0	51.06	16 8.35	66.34	15 58.44	0.231
Wed.	27	14 8 18.87	9.656	12 58 31.3	50.55	16 8.61	66.45	16 3.62	0.200
Thur.	28	14 12 10.98	9.687	13 18 38.5	-50.03	16 8.87	66.56	16 8.06	0.169
Frid.	29	14 16 3.84	9.719	13 38 33.0	49.50	16 9.12	66.67	16 11.74	0.138
Sat.	30	14 19 57.47	9.751	13 58 14.4	48.95	16 9.38	66.78	16 14.66	0.106
SUN.	31	14 23 51.87	9.783	14 17 42.4	48.38	16 9.64	66.89	16 16.81	0.073
Mon.	32	14 27 47.05	9.815	S. 14 36 56.6	-47.79	16 9.89	67.00	16 18.18	0.041

NOTE.—The mean time of semidiameter passing may be found by subtracting 0.18 from the sideral time.

The sign — prefixed to the hourly change of declination indicates that south declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		^h ^m ^s	^s	[°] ['] ["]	["]	^m ^s	^s	^h ^m ^s
Frid.	1	12 31 27.61	9.066	S. 3 23 51.8	-58.23	10 27.12	0.790	12 41 54.73
Sat.	2	12 35 5.34	9.078	3 47 8.3	58.13	10 45.94	0.778	12 45 51.28
SUN.	3	12 38 43.38	9.092	4 10 22.0	58.01	11 4.45	0.765	12 49 47.83
Mon.	4	12 42 21.75	9.106	4 33 32.6	-57.87	11 22.64	0.751	12 53 44.39
Tues.	5	12 46 0.45	9.120	4 56 39.8	57.72	11 40.49	0.736	12 57 40.94
Wed.	6	12 49 39.52	9.136	5 19 43.2	57.55	11 57.97	0.720	13 1 37.49
Thur.	7	12 53 18.97	9.152	5 42 42.4	-57.37	12 15.07	0.704	13 5 34.05
Frid.	8	12 56 58.84	9.170	6 5 37.2	57.18	12 31.76	0.687	13 9 30.60
Sat.	9	13 0 39.13	9.188	6 28 27.1	56.97	12 48.03	0.668	13 13 27.15
SUN.	10	13 4 19.87	9.208	6 51 11.8	-56.75	13 3.84	0.649	13 17 23.71
Mon.	11	13 8 1.08	9.228	7 13 51.1	56.51	13 19.18	0.629	13 21 20.26
Tues.	12	13 11 42.80	9.249	7 36 24.4	56.26	13 34.02	0.608	13 25 16.82
Wed.	13	13 15 25.03	9.271	7 58 51.6	-55.99	13 48.34	0.585	13 29 13.37
Thur.	14	13 19 7.80	9.294	8 21 12.2	55.71	14 2.12	0.562	13 33 9.92
Frid.	15	13 22 51.13	9.318	8 43 25.8	55.42	14 15.35	0.539	13 37 6.48
Sat.	16	13 26 35.05	9.343	9 5 32.1	-55.11	14 27.98	0.514	13 41 3.03
SUN.	17	13 30 19.57	9.368	9 27 30.7	54.77	14 40.02	0.488	13 44 59.59
Mon.	18	13 34 4.71	9.394	9 49 21.2	54.42	14 51.43	0.462	13 48 56.14
Tues.	19	13 37 50.49	9.421	10 11 3.3	-54.07	15 2.20	0.435	13 52 52.69
Wed.	20	13 41 36.93	9.449	10 32 36.4	53.69	15 12.32	0.407	13 56 49.25
Thur.	21	13 45 24.04	9.477	10 54 0.3	53.29	15 21.76	0.379	14 0 45.80
Frid.	22	13 49 11.83	9.506	11 15 14.4	-52.88	15 30.53	0.350	14 4 42.36
Sat.	23	13 53 0.31	9.535	11 36 18.5	52.45	15 38.60	0.321	14 8 38.91
SUN.	24	13 56 49.51	9.565	11 57 11.9	52.00	15 45.95	0.291	14 12 35.46
Mon.	25	14 0 39.43	9.595	12 17 54.5	-51.53	15 52.59	0.261	14 16 32.02
Tues.	26	14 4 30.07	9.625	12 38 25.6	51.05	15 58.50	0.231	14 20 28.57
Wed.	27	14 8 21.45	9.656	12 58 44.9	50.55	16 3.68	0.200	14 24 25.13
Thur.	28	14 12 13.58	9.687	13 18 51.9	-50.03	16 8.10	0.169	14 28 21.68
Frid.	29	14 16 6.46	9.719	13 38 46.4	49.50	16 11.78	0.137	14 32 18.24
Sat.	30	14 20 0.11	9.751	13 58 27.7	48.95	16 14.68	0.105	14 36 14.79
SUN.	31	14 23 54.52	9.784	14 17 55.6	48.37	16 16.83	0.073	14 40 11.35
Mon.	32	14 27 49.72	9.816	S. 14 37 9.5	-47.78	16 18.19	0.040	14 44 7.91

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
 The sign — prefixed to the hourly change of declination indicates that south declinations are increasing.

Diff. for 1 Hour,
 +9'.8565.
 (Table III.)

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ'					
1	274	188 34 8.4	33 16.7	147.72	— 0.33	0.0002002	—53.1	h m s 11 16 14.18
2	275	189 33 14.6	32 22.8	147.79	0.22	0.0000726	53.2	11 12 18.28
3	276	190 32 22.5	31 30.5	147.86	— 0.11	9.9999449	53.3	11 8 22.37
4	277	191 31 32.2	30 40.1	147.93	+ 0.02	9.9998169	—53.3	11 4 26.46
5	278	192 30 43.6	29 51.4	148.01	0.16	9.9996893	53.2	11 0 30.56
6	279	193 29 56.8	29 4.5	148.08	0.29	9.9995617	53.1	10 56 34.65
7	280	194 29 11.8	28 19.4	148.16	+ 0.41	9.9994345	—52.9	10 52 38.74
8	281	195 28 28.7	27 36.2	148.24	0.51	9.9993079	52.6	10 48 42.83
9	282	196 27 47.4	26 54.8	148.32	0.60	9.9991820	52.3	10 44 46.92
10	283	197 27 8.1	26 15.4	148.40	+ 0.66	9.9990568	—52.0	10 40 51.02
11	284	198 26 30.8	25 38.0	148.49	0.69	9.9989324	51.6	10 36 55.11
12	285	199 25 55.5	25 2.6	148.57	0.69	9.9988089	51.2	10 32 59.20
13	286	200 25 22.4	24 29.4	148.66	+ 0.67	9.9986862	—50.9	10 29 3.29
14	287	201 24 51.4	23 58.2	148.75	0.61	9.9985645	50.6	10 25 7.38
15	288	202 24 22.6	23 29.3	148.85	0.52	9.9984435	50.3	10 21 11.48
16	289	203 23 56.1	23 2.7	148.94	+ 0.41	9.9983231	—50.0	10 17 15.57
17	290	204 23 31.9	22 38.4	149.04	0.29	9.9982036	49.7	10 13 19.66
18	291	205 23 10.0	22 16.4	149.13	0.16	9.9980846	49.4	10 9 23.75
19	292	206 22 50.4	21 56.6	149.23	+ 0.04	9.9979661	—49.2	10 5 27.84
20	293	207 22 33.0	21 39.1	149.32	— 0.09	9.9978482	49.1	10 1 31.94
21	294	208 22 17.9	21 23.9	149.42	0.21	9.9977303	49.0	9 57 36.03
22	295	209 22 5.0	21 10.9	149.51	— 0.30	9.9976128	—48.9	9 53 40.12
23	296	210 21 54.3	21 0.0	149.60	0.38	9.9974955	48.8	9 49 44.21
24	297	211 21 45.7	20 51.3	149.69	0.42	9.9973784	48.7	9 45 48.30
25	298	212 21 39.2	20 44.6	149.77	— 0.44	9.9972614	—48.6	9 41 52.39
26	299	213 21 34.5	20 39.9	149.85	0.42	9.9971445	48.5	9 37 56.48
27	300	214 21 31.8	20 37.1	149.93	0.37	9.9970279	48.4	9 34 0.57
28	301	215 21 31.0	20 36.1	150.00	— 0.30	9.9969115	—48.3	9 30 4.67
29	302	216 21 31.8	20 36.8	150.07	0.21	9.9967956	48.2	9 26 8.76
30	303	217 21 34.3	20 39.2	150.14	— 0.10	9.9966801	48.0	9 22 12.85
31	304	218 21 38.5	20 43.2	150.21	+ 0.03	9.9965651	47.7	9 18 16.94
32	305	219 21 44.4	20 49.0	150.27	+ 0.16	9.9964509	—47.4	9 14 21.03
NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ' to the mean equinox of January 0 ^h .								Diff. for 1 Hour, —9 ^h .8296. (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	THE MOON'S								
	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
1	16 17.1	16 13.4	59 39.5	-1.06	59 25.9	-1.18	h m 4 25.8	m 2.61	d 4.9
2	16 9.4	16 5.1	59 11.1	1.27	58 55.3	1.33	5 27.7	2.53	5.9
3	16 0.6	15 56.0	58 38.8	1.39	58 22.0	1.40	6 26.7	2.38	6.9
4	15 51.4	15 46.8	58 5.1	-1.41	57 48.2	-1.40	7 21.6	2.19	7.9
5	15 42.3	15 37.8	57 31.5	1.38	57 15.0	1.36	8 12.2	2.03	8.9
6	15 33.4	15 29.0	56 58.8	1.33	56 43.0	1.30	8 59.2	1.90	9.9
7	15 24.9	15 20.8	56 27.6	-1.27	56 12.6	-1.23	9 43.6	1.81	10.9
8	15 16.8	15 13.0	55 58.0	1.20	55 43.9	1.15	10 26.5	1.77	11.9
9	15 9.3	15 5.7	55 30.4	1.10	55 17.4	1.06	11 8.9	1.77	12.9
10	15 2.4	14 59.2	55 5.0	-1.00	54 53.4	-0.93	11 51.9	1.81	13.9
11	14 56.3	14 53.6	54 42.7	0.85	54 32.9	0.77	12 36.1	1.88	14.9
12	14 51.3	14 49.3	54 24.3	0.66	54 17.0	0.55	13 22.1	1.95	15.9
13	14 47.7	14 46.5	54 11.0	-0.43	54 6.6	-0.29	14 9.9	2.03	16.9
14	14 45.8	14 45.6	54 4.0	-0.14	54 3.3	+0.03	14 59.4	2.09	17.9
15	14 45.9	14 46.9	54 4.7	+0.20	54 8.2	0.39	15 49.8	2.11	18.9
16	14 48.5	14 50.7	54 14.0	+0.59	54 22.3	+0.79	16 40.3	2.10	19.9
17	14 53.6	14 57.2	54 32.9	0.99	54 46.1	1.20	17 30.2	2.05	20.9
18	15 1.5	15 6.4	55 1.8	1.41	55 19.9	1.60	18 18.8	2.00	21.9
19	15 12.0	15 18.1	55 40.2	+1.79	56 2.8	+1.96	19 6.2	1.95	22.9
20	15 24.8	15 31.9	56 27.3	2.11	56 53.4	2.23	19 52.8	1.93	23.9
21	15 39.3	15 47.0	57 20.7	2.31	57 48.9	2.36	20 39.2	1.95	24.9
22	15 54.7	16 2.4	58 17.3	+2.36	58 45.5	+2.30	21 26.7	2.01	25.9
23	16 9.8	16 16.7	59 12.6	2.19	59 38.1	2.03	22 16.3	2.13	26.9
24	16 23.0	16 28.5	60 1.3	1.81	60 21.5	1.54	23 9.2	2.29	27.9
25	16 33.1	16 36.5	60 38.2	+1.22	60 50.7	+0.86	0		28.9
26	16 38.7	16 39.7	60 58.9	+0.50	61 2.6	+0.11	0 6.4	2.48	0.5
27	16 39.5	16 38.0	61 1.6	-0.27	60 56.1	-0.63	1 7.9	2.64	1.5
28	16 35.3	16 31.7	60 46.5	0.96	60 33.1	-1.25	2 12.3	2.71	2.5
29	16 27.2	16 22.0	60 16.6	1.49	59 57.4	1.68	3 17.1	2.66	3.5
30	16 16.2	16 10.1	59 36.2	1.83	59 13.6	1.92	4 19.2	2.50	4.5
31	16 3.7	15 57.2	58 50.1	1.97	58 26.3	1.98	5 16.8	2.29	5.5
32	15 50.7	15 44.4	58 2.5	-1.96	57 39.2	-1.91	6 9.4	2.09	6.5

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 1.					SUNDAY 3.				
0	16 56 36.61	2.6695	S. 26 26 32.7	1.791	0	19 1 38.08	2.4918	S. 24 25 12.4	6.322
1	16 59 16.77	2.6690	26 28 14.5	1.603	1	19 4 7.40	2.4855	24 18 36.7	6.668
2	17 1 56.90	2.6684	26 29 45.1	1.416	2	19 6 36.34	2.4792	24 11 52.2	6.815
3	17 4 36.98	2.6677	26 31 4.4	1.228	3	19 9 4.90	2.4728	24 4 58.9	6.959
4	17 7 17.01	2.6667	26 32 12.5	1.042	4	19 11 33.08	2.4664	23 57 57.1	7.102
5	17 9 56.98	2.6657	26 33 9.5	0.856	5	19 14 0.87	2.4599	23 50 46.7	7.243
6	17 12 36.89	2.6645	26 33 55.2	0.668	6	19 16 28.27	2.4533	23 43 27.9	7.383
7	17 15 16.72	2.6632	26 34 29.7	0.482	7	19 18 55.27	2.4468	23 36 0.7	7.522
8	17 17 56.47	2.6617	26 34 53.1	0.297	8	19 21 21.88	2.4403	23 28 25.3	7.658
9	17 20 36.12	2.6599	26 35 5.3	- 0.110	9	19 23 48.10	2.4336	23 20 41.7	7.794
10	17 23 15.66	2.6581	26 35 6.3	+ 0.075	10	19 26 13.91	2.4268	23 12 50.0	7.928
11	17 25 55.09	2.6562	26 34 56.3	0.259	11	19 28 39.32	2.4202	23 4 50.3	8.062
12	17 28 34.40	2.6540	26 34 35.2	0.444	12	19 31 4.33	2.4134	22 56 42.6	8.195
13	17 31 13.57	2.6517	26 34 3.0	0.628	13	19 33 28.93	2.4067	22 48 27.1	8.322
14	17 33 52.60	2.6493	26 33 19.8	0.812	14	19 35 53.13	2.3999	22 40 3.9	8.450
15	17 36 31.48	2.6466	26 32 25.6	0.995	15	19 38 16.92	2.3932	22 31 33.1	8.577
16	17 39 10.19	2.6438	26 31 20.4	1.178	16	19 40 40.31	2.3863	22 22 54.7	8.702
17	17 41 48.74	2.6410	26 30 4.3	1.359	17	19 43 3.28	2.3794	22 14 8.9	8.825
18	17 44 27.11	2.6380	26 28 37.3	1.540	18	19 45 25.84	2.3727	22 5 15.7	8.947
19	17 47 5.30	2.6348	26 26 59.5	1.720	19	19 47 48.00	2.3658	21 56 15.2	9.068
20	17 49 43.29	2.6315	26 25 10.9	1.900	20	19 50 9.74	2.3589	21 47 7.5	9.188
21	17 52 21.08	2.6280	26 23 11.5	2.079	21	19 52 31.07	2.3521	21 37 52.7	9.305
22	17 54 58.65	2.6244	26 21 1.4	2.257	22	19 54 51.99	2.3452	21 28 30.9	9.421
23	17 57 36.01	2.6207	S. 26 18 40.7	2.434	23	19 57 12.49	2.3383	S. 21 19 2.2	9.536
SATURDAY 2.					MONDAY 4.				
0	18 0 13.14	2.6168	S. 26 16 9.3	2.611	0	19 59 32.58	2.3314	S. 21 9 26.6	9.649
1	18 2 50.03	2.6128	26 13 27.4	2.786	1	20 1 52.26	2.3247	20 59 44.3	9.766
2	18 5 26.68	2.6087	26 10 35.0	2.961	2	20 4 11.54	2.3178	20 49 55.4	9.879
3	18 8 3.08	2.6045	26 7 32.1	3.135	3	20 6 30.40	2.3109	20 39 59.9	9.978
4	18 10 39.22	2.6002	26 4 18.8	3.307	4	20 8 48.85	2.3041	20 29 58.0	10.083
5	18 13 15.10	2.5957	26 0 55.2	3.478	5	20 11 6.89	2.2973	20 19 49.7	10.190
6	18 15 50.71	2.5912	25 57 21.4	3.649	6	20 13 24.53	2.2906	20 9 35.2	10.294
7	18 18 26.04	2.5864	25 53 37.3	3.819	7	20 15 41.76	2.2838	19 59 14.4	10.397
8	18 21 1.08	2.5816	25 49 43.1	3.988	8	20 17 58.58	2.2770	19 48 47.6	10.498
9	18 23 35.83	2.5767	25 45 38.8	4.155	9	20 20 15.00	2.2703	19 38 14.7	10.597
10	18 26 10.28	2.5717	25 41 24.5	4.322	10	20 22 31.02	2.2636	19 27 35.9	10.695
11	18 28 44.43	2.5667	25 37 0.2	4.488	11	20 24 46.63	2.2569	19 16 51.3	10.792
12	18 31 18.28	2.5614	25 32 26.0	4.652	12	20 27 1.85	2.2503	19 6 0.9	10.887
13	18 33 51.80	2.5559	25 27 42.0	4.814	13	20 29 16.67	2.2437	18 55 4.9	10.980
14	18 36 24.99	2.5505	25 22 48.3	4.976	14	20 31 31.09	2.2371	18 44 3.3	11.072
15	18 38 57.86	2.5451	25 17 44.9	5.136	15	20 33 45.12	2.2306	18 32 56.3	11.162
16	18 41 30.40	2.5394	25 12 32.0	5.295	16	20 35 58.76	2.2241	18 21 43.9	11.251
17	18 44 2.59	2.5337	25 7 9.5	5.453	17	20 38 12.01	2.2176	18 10 26.2	11.338
18	18 46 34.44	2.5280	25 1 37.6	5.610	18	20 40 24.87	2.2112	17 59 3.3	11.424
19	18 49 5.95	2.5222	24 55 56.3	5.765	19	20 42 37.35	2.2048	17 47 35.3	11.508
20	18 51 37.10	2.5162	24 50 5.8	5.918	20	20 44 49.44	2.1984	17 36 2.3	11.592
21	18 54 7.89	2.5102	24 44 6.1	6.072	21	20 47 1.16	2.1922	17 24 24.3	11.674
22	18 56 38.32	2.5041	24 37 57.2	6.223	22	20 49 12.50	2.1858	17 12 41.4	11.754
23	18 59 8.38	2.4980	24 31 39.3	6.373	23	20 51 23.46	2.1796	17 0 53.8	11.833
24	19 1 38.08	2.4918	S. 24 25 12.4	6.522	24	20 53 34.05	2.1734	S. 16 49 1.5	11.910

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 5.					THURSDAY 7.				
0	20 53 34.05	2.1734	S. 16 49 1.5	11.910	0	22 31 53.77	1.9488	S. 6 13 32.4	14.092
1	20 55 44.27	2.1673	16 37 4.6	11.986	1	22 33 50.61	1.9459	5 59 26.4	14.108
2	20 57 54.13	2.1613	16 25 3.2	12.060	2	22 35 47.28	1.9430	5 45 19.4	14.124
3	21 0 3.62	2.1552	16 12 57.4	12.133	3	22 37 43.77	1.9401	5 31 11.5	14.138
4	21 2 12.75	2.1492	16 0 47.2	12.205	4	22 39 40.09	1.9373	5 17 2.8	14.151
5	21 4 21.53	2.1433	15 48 32.8	12.276	5	22 41 36.25	1.9346	5 2 53.4	14.163
6	21 6 29.95	2.1374	15 36 14.1	12.345	6	22 43 32.24	1.9319	4 48 43.2	14.175
7	21 8 38.02	2.1317	15 23 51.4	12.412	7	22 45 28.08	1.9294	4 34 32.4	14.185
8	21 10 45.75	2.1259	15 11 24.7	12.478	8	22 47 23.77	1.9268	4 20 21.0	14.195
9	21 12 53.13	2.1202	14 58 54.0	12.543	9	22 49 19.30	1.9244	4 6 9.0	14.203
10	21 15 0.17	2.1145	14 46 19.5	12.607	10	22 51 14.70	1.9221	3 51 56.6	14.209
11	21 17 6.87	2.1090	14 33 41.2	12.669	11	22 53 9.95	1.9197	3 37 43.9	14.215
12	21 19 13.25	2.1036	14 20 59.2	12.730	12	22 55 5.06	1.9175	3 23 30.8	14.220
13	21 21 19.30	2.0980	14 8 13.6	12.789	13	22 57 0.05	1.9154	3 9 17.5	14.224
14	21 23 25.01	2.0926	13 55 24.5	12.847	14	22 58 54.91	1.9133	2 55 3.9	14.227
15	21 25 30.41	2.0873	13 42 32.0	12.903	15	23 0 49.64	1.9113	2 40 50.2	14.229
16	21 27 35.49	2.0820	13 29 36.1	12.960	16	23 2 44.26	1.9093	2 26 36.4	14.231
17	21 29 40.25	2.0768	13 16 36.8	13.014	17	23 4 38.76	1.9074	2 12 22.5	14.231
18	21 31 44.70	2.0717	13 3 34.4	13.067	18	23 6 33.15	1.9057	1 58 8.7	14.229
19	21 33 48.85	2.0666	12 50 28.8	13.119	19	23 8 27.44	1.9039	1 43 55.0	14.227
20	21 35 52.69	2.0616	12 37 20.1	13.169	20	23 10 21.62	1.9022	1 29 41.4	14.225
21	21 37 56.24	2.0567	12 24 8.5	13.218	21	23 12 15.70	1.9006	1 15 28.0	14.221
22	21 39 59.49	2.0517	12 10 54.0	13.266	22	23 14 9.69	1.8991	1 1 14.9	14.216
23	21 42 2.44	2.0468	S. 11 57 36.6	13.313	23	23 16 3.59	1.8976	S. 0 47 2.1	14.210
WEDNESDAY 6.					FRIDAY 8.				
0	21 44 5.11	2.0422	S. 11 44 16.4	13.358	0	23 17 57.40	1.8962	S. 0 32 49.7	14.203
1	21 46 7.50	2.0375	11 30 53.6	13.402	1	23 19 51.13	1.8949	0 18 37.7	14.195
2	21 48 9.61	2.0328	11 17 28.2	13.445	2	23 21 44.79	1.8937	S. 0 4 26.3	14.187
3	21 50 11.44	2.0283	11 4 0.2	13.487	3	23 23 38.37	1.8924	N. 0 9 44.7	14.177
4	21 52 13.00	2.0238	10 50 29.7	13.528	4	23 25 31.88	1.8913	0 23 55.0	14.166
5	21 54 14.30	2.0194	10 36 56.9	13.566	5	23 27 25.32	1.8902	0 38 4.6	14.154
6	21 56 15.33	2.0151	10 23 21.8	13.604	6	23 29 18.70	1.8892	0 52 13.5	14.142
7	21 58 16.11	2.0108	10 9 44.4	13.642	7	23 31 12.03	1.8883	1 6 21.7	14.129
8	22 0 16.63	2.0066	9 56 4.8	13.678	8	23 33 5.30	1.8874	1 20 29.0	14.114
9	22 2 16.90	2.0024	9 42 23.1	13.712	9	23 34 58.52	1.8867	1 34 35.4	14.098
10	22 4 16.92	1.9983	9 28 39.4	13.745	10	23 36 51.70	1.8859	1 48 40.8	14.082
11	22 6 16.70	1.9943	9 14 53.7	13.777	11	23 38 44.83	1.8852	2 2 45.2	14.065
12	22 8 16.24	1.9904	9 1 6.2	13.808	12	23 40 37.92	1.8846	2 16 48.6	14.047
13	22 10 15.55	1.9866	8 47 16.8	13.838	13	23 42 30.98	1.8841	2 30 50.9	14.028
14	22 12 14.63	1.9828	8 33 25.6	13.867	14	23 44 24.01	1.8836	2 44 52.0	14.008
15	22 14 13.49	1.9792	8 19 32.8	13.894	15	23 46 17.01	1.8832	2 58 51.9	13.988
16	22 16 12.13	1.9754	8 5 38.3	13.921	16	23 48 9.99	1.8828	3 12 50.5	13.966
17	22 18 10.54	1.9718	7 51 42.3	13.946	17	23 50 2.95	1.8825	3 26 47.8	13.943
18	22 20 8.75	1.9684	7 37 44.8	13.970	18	23 51 55.89	1.8823	3 40 43.7	13.919
19	22 22 6.75	1.9650	7 23 45.9	13.993	19	23 53 48.83	1.8822	3 54 38.1	13.894
20	22 24 4.55	1.9616	7 9 45.6	14.015	20	23 55 41.75	1.8820	4 8 31.0	13.869
21	22 26 2.14	1.9583	6 55 44.1	14.036	21	23 57 34.67	1.8820	4 22 22.4	13.843
22	22 27 59.54	1.9551	6 41 41.3	14.055	22	23 59 27.59	1.8820	4 36 12.2	13.817
23	22 29 56.75	1.9519	6 27 37.4	14.074	23	0 1 20.51	1.8820	4 50 0.4	13.788
24	22 31 53.77	1.9488	S. 6 13 32.4	14.092	24	0 3 13.43	1.8822	N. 5 3 46.8	13.759

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 9.					MONDAY 11.				
0	h m s		N. 5 3 46.8	13.759	0	h m s		N. 15 14 27.6	11.382
1	0 3 13.43	1.8822	5 17 31.5	13.729	1	1 34 45.74	1.9503	15 25 47.3	11.392
2	0 6 59.32	1.8827	5 31 14.3	13.698	2	1 36 42.83	1.9528	15 37 2.7	11.393
3	0 8 52.29	1.8830	5 44 55.3	13.667	3	1 38 40.07	1.9553	15 48 13.9	11.390
4	0 10 45.28	1.8834	5 58 34.4	13.635	4	1 40 37.47	1.9578	15 59 20.7	11.377
5	0 12 38.30	1.8838	6 12 11.5	13.602	5	1 42 35.01	1.9603	16 10 23.1	11.363
6	0 14 31.34	1.8843	6 25 46.6	13.567	6	1 44 32.71	1.9630	16 21 21.1	11.350
7	0 16 24.41	1.8848	6 39 19.5	13.532	7	1 46 30.57	1.9657	16 32 14.7	11.335
8	0 18 17.52	1.8854	6 52 50.4	13.497	8	1 48 28.59	1.9685	16 43 3.7	11.320
9	0 20 10.66	1.8861	7 6 19.1	13.459	9	1 50 26.76	1.9709	16 53 48.2	11.303
10	0 22 3.85	1.8868	7 19 45.5	13.421	10	1 52 25.10	1.9737	17 4 28.0	11.285
11	0 23 57.08	1.8876	7 33 9.6	13.383	11	1 54 23.60	1.9763	17 15 3.2	11.267
12	0 25 50.36	1.8884	7 46 31.4	13.343	12	1 56 22.26	1.9791	17 25 33.6	11.248
13	0 27 43.69	1.8892	7 59 50.8	13.303	13	1 58 21.09	1.9819	17 35 59.3	11.228
14	0 29 37.08	1.8902	8 13 7.7	13.262	14	2 0 20.09	1.9847	17 46 20.2	11.207
15	0 31 30.52	1.8912	8 26 22.2	13.220	15	2 2 19.25	1.9874	17 56 36.3	11.187
16	0 33 24.02	1.8922	8 39 34.1	13.177	16	2 4 18.58	1.9903	18 6 47.5	11.165
17	0 35 17.59	1.8933	8 52 43.4	13.133	17	2 6 18.09	1.9932	18 16 53.7	11.143
18	0 37 11.22	1.8945	9 5 50.1	13.088	18	2 8 17.76	1.9960	18 26 55.0	11.120
19	0 39 4.93	1.8957	9 18 54.0	13.043	19	2 10 17.61	1.9990	18 36 51.2	11.097
20	0 40 58.71	1.8969	9 31 55.2	12.997	20	2 12 17.64	2.0019	18 46 42.3	11.073
21	0 42 52.56	1.8982	9 44 53.6	12.950	21	2 14 17.84	2.0048	18 56 28.3	11.048
22	0 44 46.49	1.8996	9 57 49.2	12.902	22	2 16 18.21	2.0077	19 6 9.2	11.023
23	0 46 40.51	1.9010	N. 10 10 41.9	12.853	23	2 18 18.76	2.0107	N. 19 15 44.9	11.000
SUNDAY 10.					TUESDAY 12.				
0	0 48 34.61	1.9024	N. 10 23 31.5	12.803	0	2 22 20.40	2.0166	N. 19 25 15.3	11.000
1	0 50 28.80	1.9039	10 36 18.2	12.754	1	2 24 21.48	2.0196	19 34 40.4	11.000
2	0 52 23.08	1.9055	10 49 1.8	12.701	2	2 26 22.75	2.0226	19 44 0.1	11.000
3	0 54 17.46	1.9071	11 1 42.3	12.649	3	2 28 24.19	2.0256	19 53 14.5	11.000
4	0 56 11.93	1.9087	11 14 19.7	12.596	4	2 30 25.82	2.0287	20 2 23.4	11.000
5	0 58 6.51	1.9104	11 26 53.8	12.542	5	2 32 27.63	2.0316	20 11 26.9	11.000
6	1 0 1.18	1.9121	11 39 24.7	12.488	6	2 34 29.61	2.0346	20 20 24.9	11.000
7	1 1 55.96	1.9139	11 51 52.3	12.433	7	2 36 31.78	2.0377	20 29 17.3	11.000
8	1 3 50.85	1.9158	12 4 16.6	12.376	8	2 38 34.13	2.0408	20 38 4.1	11.000
9	1 5 45.85	1.9176	12 16 37.4	12.318	9	2 40 36.67	2.0438	20 46 45.2	11.000
10	1 7 40.96	1.9195	12 28 54.8	12.261	10	2 42 39.38	2.0468	20 55 20.7	11.000
11	1 9 36.19	1.9214	12 41 8.7	12.208	11	2 44 42.28	2.0498	21 3 50.5	11.000
12	1 11 31.53	1.9233	12 53 19.0	12.142	12	2 46 45.35	2.0528	21 12 14.4	11.000
13	1 13 26.99	1.9254	13 5 25.7	12.082	13	2 48 48.61	2.0559	21 20 32.6	11.000
14	1 15 22.58	1.9275	13 17 28.8	12.020	14	2 50 52.06	2.0589	21 28 44.9	11.000
15	1 17 18.29	1.9296	13 29 28.1	11.958	15	2 52 55.68	2.0619	21 36 51.3	11.000
16	1 19 14.13	1.9318	13 41 23.7	11.895	16	2 54 59.49	2.0649	21 44 51.8	11.000
17	1 21 10.10	1.9340	13 53 15.5	11.832	17	2 57 3.47	2.0679	21 52 46.4	11.000
18	1 23 6.21	1.9362	14 5 3.5	11.767	18	2 59 7.64	2.0710	22 0 34.9	11.000
19	1 25 2.45	1.9384	14 16 47.5	11.701	19	3 1 11.99	2.0739	22 8 17.3	11.000
20	1 26 58.82	1.9407	14 28 27.6	11.635	20	3 3 16.51	2.0769	22 15 53.7	11.000
21	1 28 55.34	1.9431	14 40 3.7	11.568	21	3 5 21.22	2.0800	22 23 24.0	11.000
22	1 30 51.99	1.9454	14 51 35.8	11.501	22	3 7 26.11	2.0829	22 30 48.1	11.000
23	1 32 48.79	1.9479	15 3 3.8	11.432	23	3 9 31.17	2.0858	22 38 5.9	11.000
24	1 34 45.74	1.9505	N. 15 14 27.6	11.362	24	3 11 36.41	2.0888	N. 22 45 17.5	11.000

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 13.					FRIDAY 15.				
0	3 11 36.41	a.0888	N.22 45 17.5	7.141	0	4 54 43.30	a.1924	N.26 17 40.3	1.543
1	3 13 41.83	a.0917	22 52 22.8	7.096	1	4 56 54.88	a.1935	26 19 9.1	1.437
2	3 15 47.42	a.0946	22 59 21.8	6.991	2	4 59 6.52	a.1944	26 20 30.3	1.291
3	3 17 53.18	a.0974	23 6 14.5	6.845	3	5 1 18.21	a.1953	26 21 44.0	1.166
4	3 19 59.11	a.1003	23 13 0.8	6.717	4	5 3 29.96	a.1962	26 22 50.2	1.041
5	3 22 5.22	a.1032	23 19 40.6	6.610	5	5 5 41.76	a.1970	26 23 48.9	0.914
6	3 24 11.49	a.1060	23 26 14.0	6.502	6	5 7 53.60	a.1978	26 24 39.9	0.788
7	3 26 17.94	a.1088	23 32 40.9	6.393	7	5 10 5.49	a.1985	26 25 23.4	0.662
8	3 28 24.55	a.1116	23 39 1.3	6.285	8	5 12 17.42	a.1991	26 25 59.4	0.536
9	3 30 31.33	a.1144	23 45 15.1	6.175	9	5 14 29.38	a.1997	26 26 27.7	0.409
10	3 32 38.28	a.1171	23 51 22.3	6.064	10	5 16 41.38	a.2002	26 26 48.5	0.283
11	3 34 45.38	a.1198	23 57 22.8	5.953	11	5 18 53.40	a.2006	26 27 1.7	0.156
12	3 36 52.65	a.1225	24 3 16.7	5.842	12	5 21 5.45	a.2010	26 27 7.2	+ 0.029
13	3 39 0.08	a.1252	24 9 3.9	5.731	13	5 23 17.52	a.2015	26 27 5.2	- 0.098
14	3 41 7.67	a.1278	24 14 44.4	5.618	14	5 25 29.61	a.2017	26 26 55.5	0.225
15	3 43 15.41	a.1303	24 20 18.1	5.505	15	5 27 41.72	a.2019	26 26 38.2	0.351
16	3 45 23.31	a.1329	24 25 45.0	5.392	16	5 29 53.84	a.2021	26 26 13.4	0.478
17	3 47 31.36	a.1354	24 31 5.1	5.278	17	5 32 5.97	a.2022	26 25 40.9	0.605
18	3 49 39.56	a.1379	24 36 18.3	5.163	18	5 34 18.10	a.2022	26 25 0.8	0.732
19	3 51 47.91	a.1403	24 41 24.6	5.048	19	5 36 30.23	a.2022	26 24 13.1	0.858
20	3 53 56.40	a.1428	24 46 24.0	4.933	20	5 38 42.36	a.2022	26 23 17.8	0.985
21	3 56 5.04	a.1452	24 51 16.5	4.818	21	5 40 54.49	a.2021	26 22 14.9	1.112
22	3 58 13.82	a.1475	24 56 2.1	4.701	22	5 43 6.61	a.2018	26 21 4.4	1.238
23	4 0 22.74	a.1498	N.25 0 40.6	4.585	23	5 45 18.71	a.2016	N.26 19 46.3	1.365
THURSDAY 14.					SATURDAY 16.				
0	4 2 31.80	a.1521	N.25 5 12.1	4.466	0	5 47 30.80	a.2013	N.26 18 20.6	1.492
1	4 4 40.99	a.1543	25 9 36.6	4.348	1	5 49 42.87	a.2010	26 16 47.3	1.618
2	4 6 50.32	a.1566	25 13 53.9	4.230	2	5 51 54.92	a.2006	26 15 6.4	1.745
3	4 8 59.78	a.1587	25 18 4.2	4.112	3	5 54 6.94	a.2002	26 13 17.9	1.872
4	4 11 9.36	a.1608	25 22 7.4	3.993	4	5 56 18.94	a.1997	26 11 21.8	1.998
5	4 13 19.07	a.1628	25 26 3.4	3.873	5	5 58 30.90	a.1991	26 9 18.2	2.124
6	4 15 28.89	a.1648	25 29 52.2	3.753	6	6 0 42.83	a.1985	26 7 6.9	2.251
7	4 17 38.84	a.1668	25 33 33.8	3.633	7	6 2 54.72	a.1978	26 4 48.1	2.376
8	4 19 48.90	a.1687	25 37 8.2	3.513	8	6 5 6.57	a.1972	26 2 21.8	2.502
9	4 21 59.08	a.1706	25 40 35.3	3.392	9	6 7 18.38	a.1964	25 59 47.9	2.628
10	4 24 9.37	a.1724	25 43 55.2	3.271	10	6 9 30.14	a.1956	25 57 6.5	2.753
11	4 26 19.77	a.1741	25 47 7.8	3.149	11	6 11 41.85	a.1948	25 54 17.5	2.879
12	4 28 30.26	a.1758	25 50 13.1	3.027	12	6 13 53.51	a.1938	25 51 21.0	3.004
13	4 30 40.86	a.1775	25 53 11.1	2.905	13	6 16 5.11	a.1928	25 48 17.0	3.129
14	4 32 51.56	a.1792	25 56 1.7	2.783	14	6 18 16.65	a.1918	25 45 5.5	3.253
15	4 35 2.36	a.1808	25 58 45.0	2.660	15	6 20 28.13	a.1908	25 41 46.6	3.378
16	4 37 13.25	a.1823	26 1 20.9	2.537	16	6 22 39.55	a.1897	25 38 20.2	3.503
17	4 39 24.23	a.1837	26 3 49.4	2.413	17	6 24 50.90	a.1886	25 34 46.3	3.627
18	4 41 35.29	a.1851	26 6 10.4	2.288	18	6 27 2.18	a.1874	25 31 5.0	3.750
19	4 43 46.44	a.1865	26 8 24.0	2.165	19	6 29 13.39	a.1862	25 27 16.3	3.874
20	4 45 57.67	a.1878	26 10 30.2	2.042	20	6 31 24.52	a.1849	25 23 20.1	3.997
21	4 48 8.97	a.1889	26 12 29.0	1.917	21	6 33 35.58	a.1836	25 19 16.6	4.120
22	4 50 20.34	a.1902	26 14 20.2	1.792	22	6 35 46.55	a.1822	25 15 5.7	4.243
23	4 52 31.79	a.1913	26 16 4.0	1.668	23	6 37 57.44	a.1808	25 10 47.5	4.365
24	4 54 43.30	a.1924	N.26 17 40.3	1.543	24	6 40 8.25	a.1794	N.25 6 21.9	4.488

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 17.					TUESDAY 19.				
0	6 40 8.25	2.1794	N.25 6 21.9	4.488	0	8 22 38.77	2.0879	N.19 17 30.4	9.888
1	6 42 18.97	2.1780	25 1 49.0	4.610	1	8 24 43.99	2.0861	19 7 35.4	9.907
2	6 44 29.61	2.1765	24 57 8.7	4.738	2	8 26 49.10	2.0842	18 57 34.4	10.006
3	6 46 40.15	2.1749	24 52 21.2	4.855	3	8 28 54.10	2.0823	18 47 27.5	10.104
4	6 48 50.60	2.1733	24 47 26.4	4.973	4	8 30 58.98	2.0805	18 37 14.7	10.202
5	6 51 0.95	2.1717	24 42 24.4	5.094	5	8 33 3.76	2.0787	18 26 56.1	10.301
6	6 53 11.21	2.1701	24 37 15.1	5.215	6	8 35 8.43	2.0769	18 16 31.7	10.400
7	6 55 21.36	2.1684	24 31 58.6	5.334	7	8 37 12.99	2.0751	18 6 1.5	10.499
8	6 57 31.42	2.1667	24 26 35.0	5.454	8	8 39 17.44	2.0733	17 55 25.6	10.598
9	6 59 41.37	2.1650	24 21 4.1	5.574	9	8 41 21.79	2.0717	17 44 44.0	10.697
10	7 1 51.22	2.1633	24 15 26.1	5.693	10	8 43 26.04	2.0700	17 33 56.8	10.796
11	7 4 0.97	2.1616	24 9 41.0	5.810	11	8 45 30.19	2.0683	17 23 4.0	10.895
12	7 6 10.61	2.1598	24 3 48.9	5.928	12	8 47 34.24	2.0667	17 12 5.6	10.994
13	7 8 20.14	2.1579	23 57 49.6	6.047	13	8 49 38.19	2.0651	17 1 1.7	11.093
14	7 10 29.56	2.1561	23 51 43.3	6.165	14	8 51 42.05	2.0636	16 49 52.3	11.192
15	7 12 38.87	2.1542	23 45 30.0	6.280	15	8 53 45.82	2.0621	16 38 37.4	11.291
16	7 14 48.06	2.1523	23 39 9.7	6.397	16	8 55 49.50	2.0605	16 27 17.1	11.390
17	7 16 57.14	2.1505	23 32 42.4	6.513	17	8 57 53.08	2.0590	16 15 51.5	11.489
18	7 19 6.10	2.1484	23 26 8.1	6.629	18	8 59 56.58	2.0577	16 4 20.5	11.588
19	7 21 14.95	2.1465	23 19 26.9	6.744	19	9 2 0.00	2.0563	15 52 44.2	11.687
20	7 23 23.68	2.1446	23 12 38.8	6.859	20	9 4 3.33	2.0549	15 41 2.7	11.786
21	7 25 32.30	2.1426	23 5 43.8	6.973	21	9 6 6.59	2.0537	15 29 16.0	11.885
22	7 27 40.79	2.1405	22 58 42.0	7.087	22	9 8 9.77	2.0523	15 17 24.2	11.984
23	7 29 49.16	2.1385	N.22 51 33.4	7.200	23	9 10 12.87	2.0510	N.15 5 27.2	12.083
MONDAY 18.					WEDNESDAY 20.				
0	7 31 57.41	2.1365	N.22 44 18.0	7.313	0	9 12 15.89	2.0498	N.14 53 25.2	12.182
1	7 34 5.54	2.1345	22 36 55.8	7.426	1	9 14 18.85	2.0487	14 41 18.1	12.281
2	7 36 13.55	2.1325	22 29 26.9	7.538	2	9 16 21.74	2.0477	14 29 6.1	12.380
3	7 38 21.44	2.1305	22 21 51.3	7.649	3	9 18 24.57	2.0466	14 16 49.1	12.479
4	7 40 29.21	2.1284	22 14 9.0	7.760	4	9 20 27.33	2.0455	14 4 27.2	12.578
5	7 42 36.85	2.1263	22 6 20.1	7.870	5	9 22 30.03	2.0446	13 52 0.5	12.677
6	7 44 44.37	2.1243	21 58 24.6	7.980	6	9 24 32.68	2.0437	13 39 28.9	12.776
7	7 46 51.77	2.1223	21 50 22.5	8.090	7	9 26 35.28	2.0428	13 26 52.5	12.875
8	7 48 59.04	2.1202	21 42 13.8	8.199	8	9 28 37.82	2.0420	13 14 11.5	12.974
9	7 51 6.19	2.1181	21 33 58.6	8.307	9	9 30 40.32	2.0413	13 1 25.8	13.073
10	7 53 13.21	2.1160	21 25 36.9	8.415	10	9 32 42.77	2.0405	12 48 35.4	13.172
11	7 55 20.11	2.1140	21 17 8.8	8.522	11	9 34 45.18	2.0398	12 35 40.5	13.271
12	7 57 26.89	2.1120	21 8 34.3	8.628	12	9 36 47.55	2.0392	12 22 41.1	13.370
13	7 59 33.55	2.1099	20 59 53.4	8.735	13	9 38 49.89	2.0387	12 9 37.2	13.469
14	8 1 40.08	2.1078	20 51 6.1	8.841	14	9 40 52.19	2.0381	11 56 28.8	13.568
15	8 3 46.49	2.1058	20 42 12.4	8.947	15	9 42 54.46	2.0377	11 43 16.1	13.667
16	8 5 52.78	2.1038	20 33 12.5	9.051	16	9 44 56.71	2.0373	11 29 59.0	13.766
17	8 7 58.94	2.1018	20 24 6.3	9.155	17	9 46 58.94	2.0370	11 16 37.6	13.865
18	8 10 4.99	2.0998	20 14 53.9	9.259	18	9 49 1.15	2.0367	11 3 12.0	13.964
19	8 12 10.91	2.0978	20 5 35.2	9.362	19	9 51 3.34	2.0363	10 49 42.2	14.063
20	8 14 16.72	2.0958	19 56 10.4	9.466	20	9 53 5.51	2.0362	10 36 8.3	14.162
21	8 16 22.41	2.0938	19 46 39.5	9.566	21	9 55 7.68	2.0361	10 22 30.3	14.261
22	8 18 27.98	2.0919	19 37 2.5	9.667	22	9 57 9.85	2.0361	10 8 48.3	14.360
23	8 20 33.44	2.0899	19 27 19.5	9.768	23	9 59 12.01	2.0361	9 55 2.3	14.459
24	8 22 38.77	2.0879	N.19 17 30.4	9.868	24	10 1 14.18	2.0362	N. 9 41 12.5	14.558

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 21.					SATURDAY 23.				
0	10 1 14.18	2.0562	N. 9 41 12.5	13.863	0	11 40 19.77	2.1809	S. 2 19 41.3	13.726
1	10 3 16.35	2.0563	9 27 18.7	13.928	1	11 42 27.13	2.1845	2 35 25.1	13.733
2	10 5 18.53	2.0564	9 13 21.1	13.991	2	11 44 34.71	2.1882	2 51 9.3	13.740
3	10 7 20.72	2.0567	8 59 19.8	14.053	3	11 46 42.51	2.1919	3 6 53.9	13.744
4	10 9 22.93	2.0570	8 45 14.8	14.114	4	11 48 50.54	2.1958	3 22 38.6	13.747
5	10 11 25.16	2.0574	8 31 6.1	14.175	5	11 50 58.81	2.1998	3 38 23.5	13.748
6	10 13 27.42	2.0578	8 16 53.8	14.234	6	11 53 7.31	2.1438	3 54 8.4	13.748
7	10 15 29.70	2.0583	8 2 38.0	14.292	7	11 55 16.06	2.1478	4 9 53.3	13.747
8	10 17 32.02	2.0588	7 48 18.7	14.350	8	11 57 25.05	2.1520	4 25 38.0	13.743
9	10 19 34.37	2.0595	7 33 56.0	14.407	9	11 59 34.30	2.1563	4 41 22.5	13.738
10	10 21 36.76	2.0602	7 19 29.9	14.462	10	12 1 43.80	2.1606	4 57 6.6	13.732
11	10 23 39.19	2.0610	7 5 0.5	14.517	11	12 3 53.57	2.1650	5 12 50.3	13.723
12	10 25 41.68	2.0619	6 50 27.9	14.570	12	12 6 3.60	2.1694	5 28 33.4	13.713
13	10 27 44.22	2.0628	6 35 52.1	14.622	13	12 8 13.90	2.1740	5 44 15.9	13.702
14	10 29 46.81	2.0638	6 21 13.2	14.673	14	12 10 24.48	2.1787	5 59 57.6	13.688
15	10 31 49.47	2.0648	6 6 31.3	14.724	15	12 12 35.34	2.1833	6 15 38.5	13.673
16	10 33 52.19	2.0659	5 51 46.3	14.774	16	12 14 46.48	2.1881	6 31 18.4	13.657
17	10 35 54.98	2.0671	5 36 58.4	14.822	17	12 16 57.91	2.1930	6 46 57.3	13.638
18	10 37 57.84	2.0683	5 22 7.7	14.869	18	12 19 9.64	2.1980	7 2 35.0	13.618
19	10 40 0.78	2.0697	5 7 14.1	14.916	19	12 21 21.67	2.2029	7 18 11.4	13.596
20	10 42 3.80	2.0710	4 52 17.8	14.961	20	12 23 33.99	2.2080	7 33 46.5	13.572
21	10 44 6.90	2.0725	4 37 18.8	15.005	21	12 25 46.63	2.2132	7 49 20.1	13.547
22	10 46 10.10	2.0741	4 22 17.2	15.048	22	12 27 59.58	2.2184	8 4 52.1	13.519
23	10 48 13.39	2.0757	N. 4 7 13.1	15.089	23	12 30 12.84	2.2236	S. 8 20 22.4	13.490
FRIDAY 22.					SUNDAY 24.				
0	10 50 16.78	2.0574	N. 3 52 6.5	15.130	0	12 32 26.42	2.2290	S. 8 35 50.9	13.459
1	10 52 20.28	2.0592	3 36 57.5	15.169	1	12 34 40.32	2.2345	8 51 17.5	13.426
2	10 54 23.88	2.0610	3 21 46.2	15.207	2	12 36 54.55	2.2400	9 6 42.0	13.390
3	10 56 27.60	2.0629	3 6 32.6	15.244	3	12 39 9.12	2.2456	9 22 4.3	13.353
4	10 58 31.43	2.0648	2 51 16.9	15.280	4	12 41 24.02	2.2512	9 37 24.4	13.315
5	11 0 35.38	2.0669	2 35 59.0	15.315	5	12 43 39.26	2.2569	9 52 42.1	13.274
6	11 2 39.46	2.0691	2 20 39.1	15.348	6	12 45 54.85	2.2627	10 7 57.3	13.232
7	11 4 43.67	2.0713	2 5 17.2	15.381	7	12 48 10.78	2.2685	10 23 9.9	13.187
8	11 6 48.02	2.0737	1 49 53.4	15.412	8	12 50 27.07	2.2745	10 38 19.7	13.140
9	11 8 52.51	2.0760	1 34 27.8	15.442	9	12 52 43.72	2.2804	10 53 26.7	13.092
10	11 10 57.14	2.0784	1 19 0.4	15.470	10	12 55 0.72	2.2863	11 8 30.8	13.042
11	11 13 1.92	2.0810	1 3 31.4	15.497	11	12 57 18.08	2.2924	11 23 31.7	12.988
12	11 15 6.86	2.0836	0 48 0.7	15.523	12	12 59 35.81	2.2986	11 38 29.4	12.934
13	11 17 11.95	2.0863	0 32 28.6	15.548	13	1 53.91	2.3048	11 53 23.8	12.878
14	11 19 17.21	2.0891	0 16 55.0	15.571	14	13 4 12.38	2.3110	12 8 14.7	12.819
15	11 21 22.64	2.0918	N. 0 1 20.1	15.593	15	13 6 31.23	2.3173	12 23 2.1	12.759
16	11 23 28.23	2.0947	S. 0 14 16.1	15.613	16	13 8 50.46	2.3237	12 37 45.8	12.696
17	11 25 34.00	2.0977	0 29 53.5	15.632	17	13 11 10.07	2.3301	12 52 25.6	12.630
18	11 27 39.96	2.1008	0 45 32.0	15.650	18	13 13 30.07	2.3366	13 7 1.4	12.563
19	11 29 46.10	2.1039	1 1 11.5	15.665	19	13 15 50.46	2.3430	13 21 33.2	12.495
20	11 31 52.43	2.1072	1 16 51.9	15.681	20	13 18 11.23	2.3495	13 36 0.8	12.424
21	11 33 58.96	2.1105	1 32 33.2	15.694	21	13 20 32.40	2.3562	13 50 24.1	12.351
22	11 36 5.69	2.1138	1 48 15.2	15.707	22	13 22 53.97	2.3628	14 4 42.9	12.276
23	11 38 12.62	2.1173	2 3 58.0	15.718	23	13 25 15.93	2.3694	14 18 57.2	12.198
24	11 40 19.77	2.1209	S. 2 19 41.3	15.726	24	13 27 38.30	2.3762	S. 14 33 6.7	12.118

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 25.					WEDNESDAY 27.				
0	13 27 38.30	2.3762	S. 14 33 6.7	14.118	0	15 29 27.75	2.6856	S. 23 38 55.9	7.851
1	13 30 1.07	2.3828	14 47 11.4	14.038	1	15 32 9.03	2.6903	23 46 41.7	7.674
2	13 32 24.24	2.3897	15 1 11.2	13.954	2	15 34 50.59	2.6949	23 54 16.8	7.497
3	13 34 47.83	2.3965	15 15 5.9	13.868	3	15 37 32.42	2.6994	24 1 41.3	7.318
4	13 37 11.82	2.4033	15 28 55.4	13.780	4	15 40 14.52	2.7038	24 8 55.0	7.138
5	13 39 36.22	2.4101	15 42 39.5	13.689	5	15 42 56.88	2.7081	24 15 57.8	6.956
6	13 42 1.03	2.4170	15 56 18.1	13.597	6	15 45 39.49	2.7123	24 22 49.7	6.773
7	13 44 26.26	2.4239	16 9 51.1	13.503	7	15 48 22.35	2.7162	24 29 30.6	6.589
8	13 46 51.90	2.4308	16 23 18.4	13.406	8	15 51 5.43	2.7198	24 36 0.4	6.404
9	13 49 17.95	2.4377	16 36 39.8	13.307	9	15 53 48.73	2.7235	24 42 19.1	6.217
10	13 51 44.42	2.4447	16 49 55.2	13.206	10	15 56 32.25	2.7271	24 48 26.5	6.029
11	13 54 11.31	2.4516	17 3 4.5	13.103	11	15 59 15.98	2.7304	24 54 22.6	5.841
12	13 56 38.61	2.4585	17 16 7.5	12.998	12	16 1 59.90	2.7336	25 0 7.4	5.652
13	13 59 6.33	2.4653	17 29 4.2	12.891	13	16 4 44.01	2.7366	25 5 40.8	5.461
14	14 1 34.47	2.4722	17 41 54.4	12.781	14	16 7 28.29	2.7394	25 11 2.7	5.269
15	14 4 3.03	2.4792	17 54 37.9	12.668	15	16 10 12.74	2.7421	25 16 13.1	5.077
16	14 6 32.01	2.4864	18 7 14.6	12.554	16	16 12 57.34	2.7445	25 21 12.0	4.885
17	14 9 1.40	2.4933	18 19 44.4	12.438	17	16 15 42.08	2.7468	25 25 59.3	4.691
18	14 11 31.21	2.5003	18 32 7.2	12.321	18	16 18 26.96	2.7490	25 30 34.9	4.496
19	14 14 1.44	2.5073	18 44 22.9	12.200	19	16 21 11.96	2.7509	25 34 58.8	4.301
20	14 16 32.08	2.5141	18 56 31.2	12.076	20	16 23 57.07	2.7527	25 39 11.0	4.105
21	14 19 3.13	2.5209	19 8 32.2	11.953	21	16 26 42.28	2.7543	25 43 11.4	3.909
22	14 21 34.59	2.5278	19 20 25.6	11.826	22	16 29 27.59	2.7557	25 47 0.1	3.712
23	14 24 6.47	2.5347	S. 19 32 11.3	11.697	23	16 32 12.97	2.7569	S. 25 50 36.9	3.514
TUESDAY 26.					THURSDAY 28.				
0	14 26 38.75	2.5414	S. 19 43 49.2	11.567	0	16 34 58.42	2.7580	S. 25 54 1.8	3.317
1	14 29 11.44	2.5483	19 55 19.3	11.434	1	16 37 43.93	2.7588	25 57 14.9	3.118
2	14 31 44.54	2.5550	20 6 41.3	11.298	2	16 40 29.48	2.7595	26 0 16.0	2.920
3	14 34 18.04	2.5617	20 17 55.1	11.162	3	16 43 15.07	2.7599	26 3 5.3	2.722
4	14 36 51.94	2.5683	20 29 0.7	11.023	4	16 46 0.67	2.7602	26 5 42.6	2.522
5	14 39 26.23	2.5748	20 39 57.8	10.882	5	16 48 46.29	2.7603	26 8 7.9	2.323
6	14 42 0.92	2.5814	20 50 46.5	10.739	6	16 51 31.91	2.7602	26 10 21.3	2.124
7	14 44 36.00	2.5879	21 1 26.5	10.593	7	16 54 17.51	2.7598	26 12 22.8	1.926
8	14 47 11.47	2.5943	21 11 57.7	10.447	8	16 57 3.09	2.7594	26 14 12.4	1.726
9	14 49 47.32	2.6007	21 22 20.1	10.298	9	16 59 48.64	2.7587	26 15 49.9	1.526
10	14 52 23.55	2.6069	21 32 33.5	10.147	10	17 2 34.14	2.7578	26 17 15.5	1.326
11	14 55 0.15	2.6131	21 42 37.8	9.994	11	17 5 19.58	2.7568	26 18 29.2	1.126
12	14 57 37.12	2.6192	21 52 32.8	9.839	12	17 8 4.95	2.7555	26 19 31.0	0.926
13	15 0 14.46	2.6253	22 2 18.5	9.683	13	17 10 50.24	2.7540	26 20 20.8	0.731
14	15 2 52.16	2.6313	22 11 54.8	9.525	14	17 13 35.43	2.7523	26 20 58.7	0.533
15	15 5 30.22	2.6372	22 21 21.5	9.365	15	17 16 20.52	2.7505	26 21 24.8	0.336
16	15 8 8.62	2.6429	22 30 38.6	9.204	16	17 19 5.49	2.7485	26 21 39.0	- 0.138
17	15 10 47.37	2.6487	22 39 46.0	9.041	17	17 21 50.34	2.7468	26 21 41.3	+ 0.059
18	15 13 26.46	2.6543	22 48 43.5	8.875	18	17 24 35.05	2.7449	26 21 31.9	0.255
19	15 16 5.88	2.6598	22 57 31.0	8.708	19	17 27 19.61	2.7431	26 21 10.7	0.451
20	15 18 45.63	2.6652	23 6 8.4	8.539	20	17 30 4.00	2.7412	26 20 37.8	0.647
21	15 21 25.70	2.6704	23 14 35.7	8.370	21	17 32 48.23	2.7392	26 19 53.1	0.841
22	15 24 6.08	2.6755	23 22 52.8	8.199	22	17 35 32.28	2.7372	26 18 56.8	1.035
23	15 26 46.76	2.6806	23 30 59.6	8.026	23	17 38 16.13	2.7352	26 17 48.9	1.228
24	15 29 27.75	2.6856	S. 23 38 55.9	7.851	24	17 40 59.78	2.7331	S. 26 16 29.5	1.420

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 29.					SUNDAY 31.				
0	17 40 59.78	2.7237	S. 26 16 29.5	1.420	0	19 45 14.38	2.4161	S. 21 49 35.7	9.120
1	17 43 43.21	2.7220	26 14 58.5	1.612	1	19 47 39.11	2.4082	21 40 24.9	9.240
2	17 46 26.42	2.7182	26 13 16.0	1.803	2	19 50 3.36	2.4002	21 31 6.9	9.359
3	17 49 9.39	2.7142	26 11 22.1	1.993	3	19 52 27.13	2.3922	21 21 41.8	9.477
4	17 51 52.12	2.7100	26 9 16.9	2.182	4	19 54 50.42	2.3843	21 12 9.7	9.592
5	17 54 34.59	2.7057	26 7 0.3	2.370	5	19 57 13.24	2.3764	21 2 30.8	9.705
6	17 57 16.80	2.7013	26 4 32.5	2.557	6	19 59 35.59	2.3685	20 52 45.1	9.817
7	17 59 58.74	2.6967	26 1 53.5	2.742	7	20 1 57.46	2.3606	20 42 52.7	9.928
8	18 2 40.40	2.6918	25 59 3.4	2.927	8	20 4 18.86	2.3528	20 32 53.8	10.036
9	18 5 21.76	2.6868	25 56 2.3	3.111	9	20 6 39.79	2.3448	20 22 48.4	10.143
10	18 8 2.82	2.6818	25 52 50.1	3.293	10	20 9 0.24	2.3369	20 12 36.7	10.248
11	18 10 43.58	2.6767	25 49 27.1	3.474	11	20 11 20.22	2.3291	20 2 18.7	10.352
12	18 13 24.02	2.6713	25 45 53.2	3.655	12	20 13 39.73	2.3213	19 51 54.5	10.453
13	18 16 4.13	2.6657	25 42 8.5	3.833	13	20 15 58.78	2.3137	19 41 24.4	10.552
14	18 18 43.90	2.6601	25 38 13.2	4.010	14	20 18 17.37	2.3059	19 30 48.3	10.650
15	18 21 23.34	2.6543	25 34 7.3	4.187	15	20 20 35.49	2.2982	19 20 6.4	10.747
16	18 24 2.42	2.6483	25 29 50.8	4.362	16	20 22 53.15	2.2905	19 9 18.7	10.842
17	18 26 41.14	2.6424	25 25 23.9	4.535	17	20 25 10.35	2.2829	18 58 25.4	10.934
18	18 29 19.51	2.6363	25 20 46.6	4.707	18	20 27 27.10	2.2753	18 47 26.6	11.026
19	18 31 57.50	2.6300	25 15 59.1	4.877	19	20 29 43.39	2.2677	18 36 22.3	11.117
20	18 34 35.11	2.6237	25 11 1.4	5.047	20	20 31 59.22	2.2602	18 25 12.6	11.205
21	18 37 12.34	2.6172	25 5 53.5	5.214	21	20 34 14.61	2.2528	18 13 57.7	11.292
22	18 39 49.17	2.6106	25 0 35.7	5.380	22	20 36 29.55	2.2453	18 2 37.6	11.377
23	18 42 25.61	2.6040	S. 24 55 7.9	5.544	23	20 38 44.05	2.2379	S. 17 51 12.5	11.460
SATURDAY 30.					MONDAY, NOVEMBER 1.				
0	18 45 1.65	2.5973	S. 24 49 30.4	5.707	0	20 40 58.10	2.2306	S. 17 39 42.4	11.542
1	18 47 37.28	2.5903	24 43 43.1	5.869	PHASES OF THE MOON.				
2	18 50 12.49	2.5833	24 37 46.1	6.029					
3	18 52 47.28	2.5763	24 31 39.6	6.187					
4	18 55 21.65	2.5692	24 25 23.7	6.343					
5	18 57 55.59	2.5620	24 18 58.4	6.499	d h m				
6	19 0 29.09	2.5548	24 12 23.8	6.653					
7	19 3 2.16	2.5475	24 5 40.1	6.804					
8	19 5 34.79	2.5401	23 58 47.3	6.954					
9	19 8 6.97	2.5327	23 51 45.6	7.103	☾ First Quarter . . . Oct.	2	17	31.4	
10	19 10 38.71	2.5252	23 44 35.0	7.249	○ Full Moon	10	4	41.9	
11	19 13 9.99	2.5175	23 37 15.7	7.394	☾ Last Quarter	18	9	8.9	
12	19 15 40.81	2.5099	23 29 47.7	7.537	● New Moon	25	11	28.0	
13	19 18 11.18	2.5022	23 22 11.2	7.678	d h				
14	19 20 41.08	2.4945	23 14 26.3	7.818					
15	19 23 10.52	2.4868	23 6 33.0	7.957					
16	19 25 39.50	2.4791	22 58 31.5	8.093					
17	19 28 8.01	2.4713	22 50 21.9	8.228	☾ Apogee Oct.	14	10.0		
18	19 30 36.05	2.4634	22 42 4.2	8.361	☾ Perigee	26	15.4		
19	19 33 3.62	2.4556	22 33 38.6	8.491					
20	19 35 30.72	2.4478	22 25 5.3	8.620					
21	19 37 57.35	2.4398	22 16 24.2	8.748					
22	19 40 23.50	2.4319	22 7 35.5	8.874					
23	19 42 49.18	2.4240	21 58 39.3	8.998					
24	19 45 14.38	2.4161	S. 21 49 35.7	9.120					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	SUN W.	67 18 16	2561	68 58 5	2569	70 37 42	2579	72 17 6	2589
	Fomalhaut E.	76 9 44	2639	74 31 42	2655	72 54 1	2672	71 16 43	2689
	α Pegasi E.	97 8 39	2400	95 25 4	2408	93 41 40	2416	91 58 28	2424
2	SUN W.	80 30 44	2639	82 8 46	2649	83 46 34	2660	85 24 8	2671
	SATURN W.	32 57 19	2429	34 40 13	2431	36 23 4	2434	38 5 50	2439
	Antares W.	21 44 13	2309	23 29 59	2320	25 15 30	2329	27 0 47	2339
	Fomalhaut E.	63 16 47	2799	61 42 18	2825	60 8 23	2853	58 35 4	2881
	α Pegasi E.	83 25 45	2475	81 43 56	2486	80 2 23	2498	78 21 7	2510
3	SUN W.	93 28 18	2725	95 4 24	2737	96 40 15	2748	98 15 51	2759
	SATURN W.	46 37 46	2470	48 19 41	2477	50 1 26	2483	51 43 0	2494
	Antares W.	35 43 33	2389	37 27 23	2400	39 10 58	2410	40 54 19	2420
	Fomalhaut E.	50 59 1	2669	49 30 14	2716	48 2 24	2766	46 35 34	2820
	α Pegasi E.	69 59 8	2577	68 19 41	2591	66 40 34	2607	65 1 48	2623
4	SUN W.	106 10 14	2815	107 44 23	2826	109 18 17	2837	110 51 57	2848
	SATURN W.	60 7 52	2537	61 48 14	2545	63 28 24	2555	65 8 21	2564
	Antares W.	49 27 26	2470	51 9 21	2480	52 51 2	2490	54 32 29	2500
	α Pegasi E.	56 53 35	2710	55 17 9	2731	53 41 10	2751	52 5 39	2774
	α Arietis E.	98 30 49	2487	96 49 17	2496	95 7 58	2506	93 26 53	2516
5	SUN W.	118 36 44	2903	120 8 59	2914	121 41 0	2925	123 12 47	2936
	SATURN W.	73 25 1	2610	75 3 43	2618	76 42 13	2628	78 20 30	2637
	Antares W.	62 56 19	2548	64 36 25	2559	66 16 17	2568	67 55 56	2577
	α Arietis E.	85 4 53	2564	83 25 9	2574	81 45 39	2584	80 6 22	2593
6	SATURN W.	86 28 51	2682	88 5 55	2692	89 42 46	2701	91 19 25	2710
	Antares W.	76 11 2	2624	77 49 25	2632	79 27 36	2641	81 5 35	2650
	α Arietis E.	71 53 12	2641	70 15 13	2651	68 37 27	2660	66 59 53	2669
	Aldebaran E.	104 8 58	2688	102 32 2	2696	100 55 17	2704	99 18 43	2713
7	SATURN W.	99 19 40	2755	100 55 7	2764	102 30 22	2773	104 5 25	2782
	Antares W.	89 12 30	2695	90 49 17	2703	92 25 53	2711	94 2 18	2720
	α Aquilæ W.	43 58 10	4165	45 7 9	4091	46 17 19	4027	47 28 32	3968
	α Arietis E.	58 55 14	2716	57 18 56	2726	55 42 51	2736	54 6 59	2745
	Aldebaran E.	91 18 43	2756	89 43 17	2764	88 8 2	2773	86 32 59	2782
8	Antares W.	102 1 29	2763	103 36 45	2771	105 11 51	2779	106 46 46	2788
	α Aquilæ W.	53 37 24	3756	54 53 12	3727	56 9 31	3700	57 26 18	3676
	α Arietis E.	46 10 49	2795	44 36 14	2805	43 1 53	2815	41 27 45	2826
	Aldebaran E.	78 40 36	2826	77 6 42	2836	75 33 1	2845	73 59 32	2855
9	α Aquilæ W.	63 55 45	3592	65 14 28	3581	66 33 23	3571	67 52 29	3564
	Fomalhaut W.	39 8 1	3899	40 21 22	3840	41 35 43	3788	42 50 58	3743
	Aldebaran E.	66 15 9	2903	64 42 54	2912	63 10 51	2923	61 39 1	2934
	Pollux E.	108 19 50	2852	106 46 30	2860	105 13 20	2868	103 40 20	2876
10	α Aquilæ W.	74 29 40	3542	75 49 18	3541	77 8 57	3540	78 28 37	3541
	Fomalhaut W.	49 17 35	3581	50 36 30	3559	51 55 49	3540	53 15 29	3522
	Aldebaran E.	54 3 14	2988	52 32 46	3000	51 2 33	3011	49 32 34	3024
	Pollux E.	95 57 49	2914	94 25 48	2922	92 53 57	2930	91 22 16	2937

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	SUN	W.	73 56 16	2599	75 35 13	2608	77 13 57	2618	78 52 28	2629
	Fomalhaut	E.	69 39 49	2709	68 3 21	2729	66 27 20	2731	64 51 48	2773
	α Pegasi	E.	90 15 28	2433	88 32 41	2443	86 50 8	2453	85 7 49	2464
2	SUN	W.	87 1 27	2681	88 38 32	2692	90 15 22	2704	91 51 57	2714
	SATURN	W.	39 48 29	2444	41 31 1	2450	43 13 25	2456	44 55 40	2468
	Antares	W.	28 45 49	2349	30 30 37	2359	32 15 10	2369	33 59 29	2380
	Fomalhaut	E.	57 2 24	2916	55 30 25	2920	53 59 10	2927	52 28 41	2926
	α Pegasi	E.	76 40 7	2322	74 59 24	2335	73 19 0	2348	71 38 54	2363
3	SUN	W.	99 51 13	2770	101 26 20	2781	103 1 13	2792	104 35 51	2804
	SATURN	W.	53 24 22	2502	55 5 32	2510	56 46 31	2519	58 27 18	2528
	Antares	W.	42 37 25	2430	44 20 17	2441	46 2 54	2450	47 45 17	2460
	Fomalhaut	E.	45 9 49	3280	43 45 14	3345	42 21 55	3417	40 59 58	3497
	α Pegasi	E.	63 23 24	2639	61 45 22	2655	60 7 42	2673	58 30 26	2692
4	SUN	W.	112 25 23	2859	113 58 35	2870	115 31 32	2881	117 4 15	2892
	SATURN	W.	66 48 6	2572	68 27 39	2582	70 6 59	2591	71 46 6	2600
	Antares	W.	56 13 42	2510	57 54 42	2520	59 35 28	2530	61 16 0	2539
	α Pegasi	E.	50 30 37	2798	48 56 6	2822	47 22 7	2849	45 48 43	2877
	α Arietis	E.	91 46 2	2326	90 5 25	2335	88 25 1	2345	86 44 50	2355
5	SUN	W.	124 44 20	2947	126 15 39	2958	127 46 44	2969	129 17 35	2980
	SATURN	W.	79 58 35	2646	81 36 28	2655	83 14 8	2664	84 51 36	2674
	Antares	W.	69 35 23	2586	71 14 37	2596	72 53 38	2605	74 32 26	2614
	α Arietis	E.	78 27 18	2603	76 48 27	2612	75 9 49	2622	73 31 24	2632
6	SATURN	W.	92 55 52	2719	94 32 7	2728	96 8 10	2737	97 44 1	2746
	Antares	W.	82 43 22	2659	84 20 57	2668	85 58 20	2677	87 35 31	2686
	α Arietis	E.	65 22 32	2679	63 45 24	2688	62 8 28	2698	60 31 45	2707
	Aldebaran	E.	97 42 21	2721	96 6 9	2730	94 30 9	2738	92 54 20	2747
7	SATURN	W.	105 40 16	2792	107 14 55	2801	108 49 22	2809	110 23 38	2818
	Antares	W.	95 38 31	2729	97 14 33	2738	98 50 23	2746	100 26 2	2755
	α Aquilæ	W.	48 40 43	2917	49 53 46	2926	51 7 37	2934	52 22 11	2940
	α Arietis	E.	52 31 19	2755	50 55 52	2765	49 20 38	2775	47 45 37	2785
	Aldebaran	E.	84 58 7	2791	83 23 27	2799	81 48 58	2808	80 14 41	2818
8	Antares	W.	108 21 30	2796	109 56 3	2805	111 30 25	2813	113 4 36	2821
	α Aquilæ	W.	58 43 31	2655	60 1 6	2655	61 19 2	2659	62 37 16	2665
	α Arietis	E.	39 53 51	2837	38 20 11	2848	36 46 46	2860	35 13 36	2872
	Aldebaran	E.	72 26 15	2864	70 53 10	2873	69 20 17	2883	67 47 37	2893
9	α Aquilæ	W.	69 11 43	2556	70 31 5	2552	71 50 32	2547	73 10 4	2544
	Fomalhaut	W.	44 7 0	2702	45 23 45	2665	46 41 9	2634	47 59 7	2606
	Aldebaran	E.	60 7 25	2944	58 36 2	2954	57 4 52	2965	55 33 56	2977
	Pollux	E.	102 7 30	2883	100 34 50	2891	99 2 20	2899	97 30 0	2906
10	α Aquilæ	W.	79 48 16	2543	81 7 53	2545	82 27 28	2547	83 47 0	2551
	Fomalhaut	W.	54 35 29	2507	55 55 45	2494	57 16 16	2482	58 37 0	2472
	Aldebaran	E.	48 2 51	2937	46 33 24	2951	45 4 14	2964	43 35 20	2978
	Pollux	E.	89 50 44	2945	88 19 22	2952	86 48 9	2960	85 17 6	2967

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
11	α Aquilæ W.	85 6 28	3555	86 25 51	3560	87 45 9	3566	89 4 20	3572
	Fomalhaut W.	59 57 55	3463	61 19 0	3456	62 40 13	3450	64 1 33	3443
	α Pegasi W.	37 24 31	3409	38 46 37	3387	40 9 8	3368	41 32 1	3351
	Aldebaran E.	42 6 44	3093	40 38 26	3110	39 10 28	3126	37 42 50	3143
	Pollux E.	83 46 12	2974	82 15 27	2981	80 44 51	2989	79 14 24	2996
12	α Aquilæ W.	95 38 24	3611	96 56 46	3622	98 14 57	3632	99 32 57	3643
	Fomalhaut W.	70 49 27	3430	72 11 10	3428	73 32 55	3428	74 54 40	3427
	α Pegasi W.	48 30 24	3297	49 54 39	3290	51 19 2	3284	52 43 32	3280
	Pollux E.	71 44 18	3029	70 14 41	3036	68 45 13	3043	67 15 53	3048
	Regulus E.	108 38 7	3011	107 8 8	3016	105 38 15	3022	104 8 29	3027
13	Fomalhaut W.	81 43 20	3432	83 5 0	3435	84 26 37	3437	85 48 12	3438
	α Pegasi W.	59 47 11	3264	61 12 5	3262	62 37 1	3260	64 1 59	3259
	Pollux E.	59 51 0	3077	58 22 22	3082	56 53 50	3087	55 25 25	3091
	Regulus E.	96 41 17	3052	95 12 8	3056	93 43 5	3060	92 14 6	3064
14	Fomalhaut W.	92 35 25	3454	93 56 41	3456	95 17 54	3460	96 39 3	3464
	α Pegasi W.	71 7 10	3253	72 32 16	3253	73 57 23	3252	75 22 31	3250
	α Arietis W.	27 40 11	3146	29 7 25	3142	30 34 44	3138	32 2 7	3134
	Pollux E.	48 4 42	3114	46 36 50	3118	45 9 2	3122	43 41 19	3125
	Regulus E.	84 50 15	3078	83 21 39	3080	81 53 5	3082	80 24 33	3083
	VENUS E.	107 57 10	3568	106 38 1	3569	105 18 53	3571	103 59 47	3573
15	Fomalhaut W.	103 23 41	3485	104 44 22	3489	106 4 58	3495	107 25 28	3499
	α Pegasi W.	82 28 35	3243	83 53 53	3242	85 19 13	3240	86 44 35	3237
	α Arietis W.	39 20 6	3119	40 47 53	3115	42 15 44	3113	43 43 38	3109
	Pollux E.	36 23 51	3144	34 56 35	3149	33 29 25	3153	32 2 20	3158
	Regulus E.	73 2 10	3084	71 33 41	3084	70 5 12	3082	68 36 41	3082
	VENUS E.	97 24 35	3575	96 5 33	3574	94 46 30	3572	93 27 25	3571
	JUPITER E.	102 4 41	3174	100 38 1	3173	99 11 20	3173	97 44 38	3170
16	α Pegasi W.	93 52 10	3224	95 17 51	3220	96 43 37	3216	98 9 27	3213
	α Arietis W.	51 4 21	3087	52 32 46	3082	54 1 17	3077	55 29 55	3070
	Regulus E.	61 13 30	3067	59 44 40	3064	58 15 46	3059	56 46 46	3055
	VENUS E.	86 51 27	3556	85 32 5	3552	84 12 38	3547	82 53 6	3541
	JUPITER E.	90 30 23	3155	89 3 20	3151	87 36 12	3147	86 8 59	3141
	SUN E.	116 9 33	3463	114 48 27	3457	113 27 15	3452	112 5 57	3446
17	α Arietis W.	62 55 6	3035	64 24 35	3026	65 54 15	3018	67 24 5	3009
	Aldebaran W.	31 34 6	3235	32 59 34	3209	34 25 32	3186	35 51 58	3165
	Regulus E.	49 20 8	3023	47 50 24	3017	46 20 32	3009	44 50 30	3001
	VENUS E.	76 13 44	3508	74 53 29	3499	73 33 4	3491	72 12 30	3482
	JUPITER E.	78 51 8	3110	77 23 10	3101	75 55 2	3093	74 26 44	3085
	SUN E.	105 17 38	3410	103 55 33	3401	102 33 18	3393	101 10 53	3382
18	α Arietis W.	74 56 15	2958	76 27 21	2946	77 58 42	2934	79 30 18	2922
	Aldebaran W.	43 10 16	3068	44 39 5	3050	46 8 16	3031	47 37 50	3014
	Regulus E.	37 17 37	2954	35 46 26	2944	34 15 3	2933	32 43 26	2923
	VENUS E.	65 26 57	3430	64 5 14	3418	62 43 18	3406	61 21 8	3393
	JUPITER E.	67 2 28	3036	65 33 0	3025	64 3 18	3014	62 33 22	3001
	SUN E.	94 15 50	3328	92 52 11	3315	91 28 17	3303	90 4 9	3289

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
11	α Aquilæ W.	90 23 25	3579	91 42 22	3586	93 1 12	3594	94 19 53	3603
	Fomalhaut W.	65 22 59	3440	66 44 30	3436	68 6 6	3433	69 27 45	3431
	α Pegasi W.	42 55 13	3338	44 18 41	3325	45 42 24	3314	47 6 19	3306
	Aldebaran E.	36 15 35	3164	34 48 43	3185	33 22 16	3208	31 56 16	3233
	Pollux E.	77 44 6	3002	76 13 56	3009	74 43 55	3016	73 14 2	3023
12	α Aquilæ W.	100 50 45	3654	102 8 21	3666	103 25 44	3679	104 42 53	3693
	Fomalhaut W.	76 16 26	3428	77 38 11	3429	78 59 55	3430	80 21 38	3431
	α Pegasi W.	54 8 7	3276	55 32 47	3271	56 57 32	3269	58 22 20	3266
	Pollux E.	65 46 40	3054	64 17 34	3060	62 48 36	3066	61 19 45	3071
	Regulus E.	102 38 50	3032	101 9 17	3038	99 39 51	3043	98 10 31	3047
13	Fomalhaut W.	87 9 45	3441	88 31 15	3444	89 52 42	3447	91 14 5	3450
	α Pegasi W.	65 26 58	3258	66 51 59	3257	68 17 1	3255	69 42 5	3254
	Pollux E.	53 57 5	3096	52 28 51	3101	51 0 43	3105	49 32 40	3110
	Regulus E.	90 45 12	3067	89 16 22	3070	87 47 36	3073	86 18 54	3076
14	Fomalhaut W.	98 0 7	3468	99 21 7	3471	100 42 3	3476	102 2 54	3480
	α Pegasi W.	76 47 41	3249	78 12 52	3247	79 38 5	3247	81 3 19	3245
	α Arietis W.	33 29 35	3131	34 57 7	3128	36 24 43	3124	37 52 23	3122
	Pollux E.	42 13 40	3129	40 46 6	3133	39 18 36	3137	37 51 11	3141
	Regulus E.	78 56 3	3084	77 27 34	3085	75 59 6	3085	74 30 38	3085
	Venus E.	102 40 43	3574	101 21 40	3575	100 2 38	3576	98 43 37	3575
15	Fomalhaut W.	108 45 53	3505	110 6 12	3511	111 26 24	3517	112 46 29	3524
	α Pegasi W.	88 10 0	3236	89 35 27	3232	91 0 58	3230	92 26 32	3226
	α Arietis W.	45 11 37	3105	46 39 41	3101	48 7 49	3097	49 36 2	3092
	Pollux E.	30 35 21	3164	29 8 29	3170	27 41 44	3177	26 15 7	3185
	Regulus E.	67 8 9	3079	65 39 34	3077	64 10 56	3074	62 42 15	3071
	Venus E.	92 8 19	3568	90 49 10	3566	89 29 59	3564	88 10 45	3560
	Jupiter E.	96 17 53	3168	94 51 6	3165	93 24 15	3163	91 57 21	3159
16	α Pegasi W.	99 35 21	3209	101 1 20	3204	102 27 24	3199	103 53 34	3195
	α Arietis W.	56 58 41	3065	58 27 34	3057	59 56 36	3051	61 25 46	3043
	Regulus E.	55 17 41	3049	53 48 29	3043	52 19 10	3037	50 49 43	3030
	Venus E.	81 33 27	3535	80 13 42	3529	78 53 50	3523	77 33 51	3515
	Jupiter E.	84 41 39	3136	83 14 13	3129	81 46 39	3124	80 18 58	3116
	Sun E.	110 44 32	3439	109 23 0	3433	108 1 21	3426	106 39 34	3418
17	α Arietis W.	68 54 6	3000	70 24 19	2989	71 54 45	2980	73 25 23	2969
	Aldebaran W.	37 18 49	3144	38 46 5	3124	40 13 46	3105	41 41 50	3087
	Regulus E.	43 20 18	2992	41 49 55	2983	40 19 21	2973	38 48 35	2964
	Venus E.	70 51 46	3472	69 30 51	3463	68 9 45	3452	66 48 27	3441

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
19	α Arietis W.	87 12 23	2854	88 45 41	2839	90 19 18	2825	91 53 14	2808
	Aldebaran W.	55 11 5	2926	56 42 51	2909	58 14 59	2891	59 47 30	2873
	VENUS E.	54 26 33	3325	53 2 50	3310	51 38 50	3294	50 14 32	3280
	JUPITER E.	54 59 51	2938	53 28 20	2924	51 56 31	2910	50 24 25	2895
	SUN E.	82 59 24	3217	81 33 35	3201	80 7 27	3185	78 41 0	3168
20	α Arietis W.	99 48 5	2728	101 24 8	2711	103 0 33	2694	104 37 21	2677
	Aldebaran W.	67 35 55	2781	69 10 48	2763	70 46 5	2744	72 21 47	2725
	Pollux W.	25 23 0	2827	26 56 53	2798	28 31 24	2770	30 6 31	2744
	JUPITER E.	42 39 15	2822	41 5 16	2808	39 30 59	2793	37 56 22	2779
	VENUS E.	43 8 33	3201	41 42 25	3186	40 15 59	3170	38 49 14	3154
	SUN E.	71 23 39	3082	69 55 7	3063	68 26 12	3045	66 56 55	3026
21	Aldebaran W.	80 26 34	2630	82 4 48	2610	83 43 29	2591	85 22 36	2572
	Pollux W.	38 10 27	2624	39 48 49	2601	41 27 42	2580	43 7 5	2559
	SUN E.	59 24 38	2931	57 52 58	2912	56 20 54	2892	54 48 25	2873
22	Aldebaran W.	93 44 41	2479	95 26 24	2460	97 8 33	2443	98 51 7	2425
	Pollux W.	51 31 21	2454	53 13 39	2433	54 56 26	2414	56 39 41	2394
	SUN E.	46 59 53	2779	45 24 57	2760	43 49 37	2743	42 13 54	2725
23	Pollux W.	65 22 47	2302	67 8 44	2284	68 55 7	2267	70 41 55	2251
	Regulus W.	28 20 58	2296	30 7 4	2277	31 53 38	2259	33 40 38	2241
	SUN E.	34 9 47	2648	32 31 57	2635	30 53 50	2624	29 15 27	2614
27	SUN W.	21 58 2	2429	23 40 56	2417	25 24 6	2410	27 7 27	2404
	α Aquilæ E.	70 22 36	2705	68 46 3	2727	67 9 59	2750	65 34 26	2777
	Fomalhaut E.	94 27 16	2400	92 43 41	2402	91 0 9	2405	89 16 42	2410
	α Pegasi E.	116 11 55	2214	114 23 49	2212	112 35 40	2211	110 47 29	2210
28	SUN W.	35 44 54	2410	37 28 14	2416	39 11 26	2422	40 54 29	2430
	α Aquilæ E.	57 46 44	2960	56 15 41	3009	54 45 39	3064	53 16 43	3120
	Fomalhaut E.	80 41 54	2457	78 59 40	2470	77 17 45	2485	75 36 11	2501
	α Pegasi E.	101 47 6	2228	99 59 20	2234	98 11 43	2242	96 24 17	2249
29	SUN W.	49 26 42	2479	51 8 25	2490	52 49 52	2503	54 31 1	2515
	SATURN W.	25 57 14	2302	27 43 11	2299	29 29 12	2300	31 15 12	2303
	Fomalhaut E.	67 14 42	2606	65 35 55	2632	63 57 43	2659	62 20 8	2689
	α Pegasi E.	87 30 34	2303	85 44 39	2315	83 59 2	2329	82 13 45	2344
30	SUN W.	62 52 12	2585	64 31 28	2600	66 10 23	2615	67 48 57	2630
	SATURN W.	40 3 13	2341	41 48 13	2352	43 32 57	2368	45 17 25	2374
	Antares W.	31 56 38	2249	33 43 53	2263	35 30 47	2277	37 17 20	2292
	Fomalhaut E.	54 23 2	2871	52 50 6	2916	51 18 7	2964	49 47 9	3015
	α Pegasi E.	73 32 47	2424	71 49 46	2442	70 7 11	2460	68 25 2	2480
	α Arietis E.	115 56 20	2268	114 9 34	2281	112 23 7	2296	110 37 1	2309
31	SUN W.	75 56 35	2709	77 33 3	2725	79 9 9	2741	80 44 54	2757
	SATURN W.	53 55 21	2439	55 38 0	2453	57 20 19	2467	59 2 19	2481
	Antares W.	46 4 40	2366	47 49 3	2382	49 33 4	2396	51 16 44	2412
	α Pegasi E.	60 1 20	2585	58 22 5	2610	56 43 23	2633	55 5 13	2659
	α Arietis E.	101 51 45	2383	100 7 46	2398	98 24 8	2413	96 40 52	2428

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
19	α Arietis W.	93 27 31	2793	95 2 8	2777	96 37 6	2761	98 12 25	2745
	Aldebaran W.	61 20 24	2855	62 53 41	2836	64 27 22	2818	66 1 27	2800
	VENUS E.	48 49 57	3265	47 25 4	3248	45 59 52	3233	44 34 22	3217
	JUPITER E.	48 52 0	2881	47 19 17	2866	45 46 15	2852	44 12 54	2838
	SUN E.	77 14 13	3152	75 47 6	3134	74 19 38	3117	72 51 49	3100
20	α Arietis W.	106 14 32	2659	107 52 7	2641	109 30 6	2624	111 8 29	2605
	Aldebaran W.	73 57 53	2706	75 34 25	2687	77 11 22	2668	78 48 45	2649
	Pollux W.	31 42 13	2719	33 18 28	2694	34 55 16	2670	36 32 36	2647
	JUPITER E.	36 21 27	2765	34 46 13	2751	33 10 41	2738	31 34 52	2725
	VENUS E.	37 22 10	3139	35 54 48	3124	34 27 8	3110	32 59 10	3096
	SUN E.	65 27 15	3007	63 57 11	2989	62 26 44	2969	60 55 53	2950
21	Aldebaran W.	87 2 9	2553	88 42 8	2535	90 22 33	2516	92 3 24	2497
	Pollux W.	44 46 57	2537	46 27 19	2515	48 8 11	2494	49 49 32	2475
	SUN E.	53 15 32	2854	51 42 14	2835	50 8 32	2816	48 34 25	2797
22	Aldebaran W.	100° 34 6	2408	102 17 30	2390	104 1 19	2374	105 45 31	2357
	Pollux W.	58 23 24	2375	60 7 34	2356	61 52 12	2338	63 37 16	2320
	SUN E.	40 37 48	2708	39 1 19	2692	37 24 29	2677	35 47 18	2662
23	Pollux W.	72 29 7	2235	74 16 43	2219	76 4 42	2204	77 53 4	2189
	Regulus W.	35 28 4	2225	37 15 55	2208	39 4 11	2192	40 52 50	2177
	SUN E.	27 36 51	2606	25 58 4	2600	24 19 9	2597	22 40 10	2590
27	SUN W.	28 50 56	2402	30 34 28	2403	32 17 59	2404	34 1 28	2406
	α Aquilæ E.	63 59 28	2807	62 25 9	2839	60 51 32	2876	59 18 42	2916
	Fomalhaut E.	87 33 22	2417	85 50 11	2425	84 7 12	2433	82 24 25	2445
	α Pegasi E.	108 59 17	2212	107 11 7	2214	105 23 1	2218	103 35 0	2223
28	SUN W.	42 37 21	2438	44 20 1	2447	46 2 29	2457	47 44 43	2467
	α Aquilæ E.	51 48 58	3185	50 22 31	3256	48 57 28	3333	47 33 55	3419
	Fomalhaut E.	73 54 59	2520	72 14 13	2538	70 33 53	2559	68 54 2	2582
	α Pegasi E.	94 37 3	2259	92 50 3	2268	91 3 17	2279	89 16 47	2291
29	SUN W.	56 11 53	2529	57 52 26	2542	59 32 41	2556	61 12 36	2570
	SATURN W.	33 1 7	2308	34 46 55	2315	36 32 33	2323	38 17 59	2331
	Fomalhaut E.	60 43 13	2720	59 7 0	2754	57 31 32	2791	55 56 52	2829
	α Pegasi E.	80 28 49	2358	78 44 14	2374	77 0 2	2390	75 16 13	2406
30	SUN W.	69 27 11	2646	71 5 4	2662	72 42 35	2677	74 19 46	2693
	SATURN W.	47 1 37	2387	48 45 31	2400	50 29 6	2412	52 12 23	2426
	Antares W.	39 3 31	2307	40 49 21	2322	42 34 49	2337	44 19 55	2351
	Fomalhaut E.	48 17 15	3071	46 48 30	3133	45 21 0	3198	43 54 48	3270
	α Pegasi E.	66 43 21	2499	65 2 7	2520	63 21 22	2541	61 41 6	2565
	α Arietis E.	108 51 15	2324	107 5 50	2339	105 20 47	2353	103 36 5	2368
31	SUN W.	82 20 18	2773	83 55 21	2790	85 30 2	2806	87 4 22	2821
	SATURN W.	60 43 59	2495	62 25 19	2509	64 6 20	2523	65 47 1	2538
	Antares W.	53 0 2	2426	54 42 59	2442	56 25 34	2457	58 7 48	2472
	α Pegasi E.	53 27 38	2685	51 50 38	2713	50 14 15	2741	48 38 30	2771
	α Arietis E.	94 57 57	2443	93 15 24	2458	91 33 11	2472	89 51 19	2487

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ' "	"	' "	s	m s	s
Mon.	1	14 27 47.05	9.815	S. 14 36 56.6	-47.79	16 9.89	67.00	16 18.18	0.041
Tues.	2	14 31 43.01	9.848	14 55 56.4	47.19	16 10.15	67.12	16 18.77	0.008
Wed.	3	14 35 39.77	9.882	15 14 41.6	46.57	16 10.40	67.23	16 18.56	0.025
Thur.	4	14 39 37.33	9.915	15 33 11.6	-45.94	16 10.65	67.35	16 17.56	0.058
Frid.	5	14 43 35.70	9.949	15 51 26.3	45.28	16 10.89	67.47	16 15.75	0.092
Sat.	6	14 47 34.90	9.983	16 9 25.1	44.61	16 11.13	67.59	16 13.12	0.126
SUN.	7	14 51 34.91	10.018	16 27 7.6	-43.93	16 11.37	67.71	16 9.67	0.161
Mon.	8	14 55 35.76	10.053	16 44 33.5	43.23	16 11.60	67.83	16 5.39	0.196
Tues.	9	14 59 37.46	10.088	17 1 42.4	42.51	16 11.83	67.95	16 0.26	0.231
Wed.	10	15 3 40.00	10.123	17 18 34.0	-41.78	16 12.06	68.06	15 54.30	0.266
Thur.	11	15 7 43.39	10.159	17 35 7.7	41.03	16 12.28	68.18	15 47.48	0.302
Frid.	12	15 11 47.64	10.195	17 51 23.3	40.26	16 12.50	68.30	15 39.80	0.338
Sat.	13	15 15 52.76	10.231	18 7 20.4	-39.48	16 12.71	68.42	15 31.27	0.374
SUN.	14	15 19 58.74	10.267	18 22 58.4	38.68	16 12.92	68.54	15 21.87	0.410
Mon.	15	15 24 5.58	10.303	18 38 17.2	37.87	16 13.12	68.66	15 11.61	0.445
Tues.	16	15 28 13.29	10.339	18 53 16.2	-37.04	16 13.32	68.77	15 0.49	0.481
Wed.	17	15 32 21.85	10.375	19 7 55.1	36.19	16 13.52	68.89	14 48.51	0.517
Thur.	18	15 36 31.27	10.410	19 22 13.4	35.33	16 13.72	69.00	14 35.69	0.552
Frid.	19	15 40 41.54	10.445	19 36 10.9	-34.45	16 13.91	69.11	14 22.01	0.587
Sat.	20	15 44 52.64	10.480	19 49 47.1	33.55	16 14.10	69.22	14 7.51	0.622
SUN.	21	15 49 4.58	10.514	20 3 1.6	32.64	16 14.28	69.33	13 52.17	0.656
Mon.	22	15 53 17.32	10.547	20 15 54.0	-31.72	16 14.47	69.44	13 36.04	0.689
Tues.	23	15 57 30.86	10.580	20 28 24.0	30.78	16 14.65	69.55	13 19.10	0.722
Wed.	24	16 1 45.18	10.612	20 40 31.3	29.82	16 14.83	69.65	13 1.38	0.754
Thur.	25	16 6 0.26	10.644	20 52 15.4	-28.85	16 15.00	69.75	12 42.91	0.785
Frid.	26	16 10 16.08	10.674	21 3 36.0	27.86	16 15.17	69.85	12 23.70	0.815
Sat.	27	16 14 32.63	10.704	21 14 32.8	26.86	16 15.34	69.95	12 3.76	0.845
SUN.	28	16 18 49.87	10.733	21 25 5.5	-25.85	16 15.51	70.05	11 43.13	0.874
Mon.	29	16 23 7.80	10.761	21 35 13.8	24.83	16 15.68	70.14	11 21.82	0.902
Tues.	30	16 27 26.38	10.788	21 44 57.3	23.79	16 15.84	70.23	10 59.86	0.928
Wed.	31	16 31 45.60	10.814	S. 21 54 15.8	-22.74	16 16.00	70.32	10 37.26	0.954

NOTE.—The mean time of semidiameter passing may be found by subtracting 0.19 from the sidereal time.

The sign — prefixed to the hourly change of declination indicates that south declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		h m s	s	° ' "	"	m s	s	h m s
Mon.	1	14 27 49.72	9.816	S. 14 37 9.5	-47.78	16 18.19	0.040	14 44 7.91
Tues.	2	14 31 45.69	9.849	14 56 9.2	47.18	16 18.77	0.007	14 48 4.46
Wed.	3	14 35 42.46	9.882	15 14 54.2	46.56	16 18.55	0.026	14 52 1.01
Thur.	4	14 39 40.03	9.915	15 33 24.1	-45.92	16 17.54	0.060	14 55 57.57
Frid.	5	14 43 38.40	9.949	15 51 38.5	45.27	16 15.72	0.094	14 59 54.13
Sat.	6	14 47 37.60	9.983	16 9 37.1	44.60	16 13.09	0.128	15 3 50.68
SUN.	7	14 51 37.61	10.018	16 27 19.4	-43.92	16 9.63	0.162	15 7 47.24
Mon.	8	14 55 38.46	10.053	16 44 45.1	43.22	16 5.33	0.197	15 11 43.79
Tues.	9	14 59 40.15	10.088	17 1 53.8	42.50	16 0.20	0.232	15 15 40.35
Wed.	10	15 3 42.68	10.123	17 18 45.1	-41.77	15 54.22	0.267	15 19 36.91
Thur.	11	15 7 46.06	10.159	17 35 18.5	41.02	15 47.40	0.302	15 23 33.46
Frid.	12	15 11 50.31	10.194	17 51 33.8	40.25	15 39.71	0.338	15 27 30.02
Sat.	13	15 15 55.40	10.230	18 7 30.5	-39.47	15 31.17	0.374	15 31 26.57
SUN.	14	15 20 1.37	10.266	18 23 8.3	38.67	15 21.76	0.410	15 35 23.13
Mon.	15	15 24 8.19	10.302	18 38 26.8	37.86	15 11.50	0.446	15 39 19.69
Tues.	16	15 28 15.88	10.338	18 53 25.4	-37.03	15 0.37	0.482	15 43 16.25
Wed.	17	15 32 24.41	10.374	19 8 4.0	36.18	14 48.39	0.518	15 47 12.80
Thur.	18	15 36 33.81	10.409	19 22 22.0	35.32	14 35.55	0.553	15 51 9.36
Frid.	19	15 40 44.04	10.444	19 36 19.1	-34.44	14 21.87	0.588	15 55 5.91
Sat.	20	15 44 55.11	10.478	19 49 54.9	33.54	14 7.36	0.622	15 59 2.47
SUN.	21	15 49 7.01	10.512	20 3 9.1	32.63	13 52.02	0.656	16 2 59.03
Mon.	22	15 53 19.71	10.546	20 16 1.2	-31.70	13 35.88	0.689	16 6 55.59
Tues.	23	15 57 33.20	10.579	20 28 30.8	30.76	13 18.94	0.722	16 10 52.14
Wed.	24	16 1 47.48	10.611	20 40 37.7	29.80	13 1.22	0.754	16 14 48.70
Thur.	25	16 6 2.51	10.642	20 52 21.4	-28.83	12 42.75	0.785	16 18 45.26
Frid.	26	16 10 18.28	10.672	21 3 41.7	27.85	12 23.53	0.815	16 22 41.82
Sat.	27	16 14 34.78	10.702	21 14 38.2	26.85	12 3.60	0.845	16 26 38.37
SUN.	28	16 18 51.97	10.730	21 25 10.5	-25.84	11 42.96	0.874	16 30 34.93
Mon.	29	16 23 9.84	10.758	21 35 18.4	24.81	11 21.65	0.902	16 34 31.49
Tues.	30	16 27 28.36	10.785	21 45 1.6	23.77	10 59.69	0.928	16 38 28.05
Wed.	31	16 31 47.51	10.811	S. 21 54 19.8	-22.73	10 37.09	0.953	16 42 24.60

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign — prefixed to the hourly change of declination indicates that south declinations are increasing.

Diff. for 1 Hour,
+ 9°.8565.
(Table III.)

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ'					
1	305	219 21 44.4	20 49.0	150.27	+ 0.16	9.9964509	-47.4	9 14 21.03
2	306	220 21 51.6	20 56.0	150.34	0.30	9.9963377	47.0	9 10 25.12
3	307	221 22 0.5	21 4.8	150.40	0.42	9.9962256	46.5	9 6 29.21
4	308	222 22 10.9	21 15.1	150.47	+ 0.53	9.9961146	-45.9	9 2 33.30
5	309	223 22 22.8	21 26.8	150.53	0.62	9.9960051	45.3	8 58 37.39
6	310	224 22 36.2	21 40.1	150.60	0.68	9.9958971	44.6	8 54 41.48
7	311	225 22 51.2	21 54.9	150.66	+ 0.71	9.9957908	-43.9	8 50 45.57
8	312	226 23 7.8	22 11.4	150.73	0.71	9.9956863	43.2	8 46 49.66
9	313	227 23 26.1	22 29.5	150.80	0.69	9.9955836	42.4	8 42 53.75
10	314	228 23 46.0	22 49.3	150.87	+ 0.63	9.9954828	-41.6	8 38 57.84
11	315	229 24 7.7	23 10.8	150.94	0.55	9.9953840	40.8	8 35 1.93
12	316	230 24 31.1	23 34.1	151.01	0.44	9.9952870	40.0	8 31 6.02
13	317	231 24 56.4	23 59.2	151.09	+ 0.33	9.9951919	-39.2	8 27 10.11
14	318	232 25 23.4	24 26.1	151.16	0.20	9.9950987	38.5	8 23 14.20
15	319	233 25 52.2	24 54.7	151.24	+ 0.06	9.9950073	37.8	8 19 18.29
16	320	234 26 23.0	25 25.4	151.32	- 0.06	9.9949174	-37.1	8 15 22.38
17	321	235 26 55.6	25 57.8	151.40	0.18	9.9948292	36.4	8 11 26.47
18	322	236 27 30.0	26 32.0	151.47	0.28	9.9947425	35.8	8 7 30.56
19	323	237 28 6.1	27 8.0	151.54	- 0.36	9.9946572	-35.3	8 3 34.65
20	324	238 28 44.0	27 45.7	151.61	0.41	9.9945731	34.8	7 59 38.74
21	325	239 29 23.5	28 25.0	151.68	0.45	9.9944902	34.3	7 55 42.82
22	326	240 30 4.6	29 6.0	151.74	- 0.44	9.9944084	-33.8	7 51 46.91
23	327	241 30 47.2	29 48.4	151.80	0.40	9.9943278	33.4	7 47 51.00
24	328	242 31 31.2	30 32.2	151.86	0.33	9.9942483	32.9	7 43 55.09
25	329	243 32 16.6	31 17.4	151.91	- 0.24	9.9941700	-32.4	7 39 59.18
26	330	244 33 3.1	32 3.8	151.96	0.13	9.9940927	31.9	7 36 3.27
27	331	245 33 50.8	32 51.3	152.01	- 0.01	9.9940168	31.4	7 32 7.36
28	332	246 34 39.6	33 39.9	152.05	+ 0.12	9.9939422	-30.8	7 28 11.44
29	333	247 35 29.4	34 29.6	152.09	0.26	9.9938690	30.2	7 24 15.53
30	334	248 36 20.1	35 20.1	152.13	0.38	9.9937973	29.5	7 20 19.62
31	335	249 37 11.6	36 11.4	152.16	+ 0.50	9.9937275	-28.7	7 16 23.71
NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ' to the mean equinox of January 0 ^d .								Diff. for 1 Hour, —9 ^d .8296. (Table II.)

GREENWICH MEAN TIME.									
Day of the Month.	THE MOON'S								
	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
1	15 50.7	15 44.4	58 2.5	-1.96	57 39.2	-1.91	h m 6 9.4	m 2.09	d 6.5
2	15 38.2	15 32.3	57 16.6	1.84	56 55.0	1.75	6 57.6	1.93	7.5
3	15 26.7	15 21.5	56 34.5	1.65	56 15.3	1.55	7 42.5	1.82	8.5
4	15 16.6	15 12.1	55 57.4	-1.44	55 40.8	-1.33	8 25.5	1.76	9.5
5	15 7.9	15 4.1	55 25.5	1.22	55 11.5	1.11	9 7.5	1.75	10.5
6	15 0.7	14 57.5	54 58.8	1.01	54 47.3	0.91	9 49.8	1.78	11.5
7	14 54.7	14 52.3	54 37.0	-0.81	54 27.9	-0.71	10 33.3	1.84	12.5
8	14 50.1	14 48.2	54 19.9	0.62	54 13.1	0.52	11 18.4	1.92	13.5
9	14 46.7	14 45.5	54 7.5	0.42	54 3.1	0.32	12 5.6	2.01	14.5
10	14 44.6	14 44.1	53 59.9	-0.21	53 58.0	-0.10	12 54.5	2.07	15.5
11	14 44.0	14 44.3	53 57.6	+0.03	53 58.6	+0.15	13 44.7	2.10	16.5
12	14 45.0	14 46.2	54 1.2	0.29	54 5.6	0.44	14 35.1	2.09	17.5
13	14 47.9	14 50.1	54 11.7	+0.59	54 19.8	+0.76	15 24.9	2.05	18.5
14	14 52.8	14 56.2	54 29.9	0.93	54 42.2	1.11	16 13.2	1.98	19.5
15	15 0.1	15 4.6	54 56.5	1.29	55 13.2	1.48	17 0.0	1.92	20.5
16	15 9.7	15 15.4	55 32.0	+1.66	55 52.9	+1.83	17 45.5	1.88	21.5
17	15 21.7	15 28.5	56 15.9	2.00	56 40.8	2.15	18 30.4	1.87	22.5
18	15 35.7	15 43.3	57 7.4	2.27	57 35.2	2.36	19 15.6	1.91	23.5
19	15 51.1	15 59.1	58 4.0	+2.42	58 33.2	+2.43	20 2.5	2.01	24.5
20	16 7.0	16 14.7	59 2.3	2.39	59 30.6	2.30	20 52.4	2.16	25.5
21	16 22.0	16 28.6	59 57.4	2.14	60 21.9	1.92	21 46.6	2.36	26.5
22	16 34.5	16 39.4	60 43.4	+1.64	61 1.2	+1.30	22 45.8	2.58	27.5
23	16 43.0	16 45.4	61 14.7	0.93	61 23.5	+0.52	23 49.8	2.74	28.5
24	16 46.4	16 46.0	61 27.1	+0.09	61 25.6	-0.34	0		0.1
25	16 44.2	16 41.0	61 18.9	-0.76	61 7.3	-1.15	0 56.5	2.79	1.1
26	16 36.7	16 31.3	60 51.3	1.49	60 31.6	1.78	2 2.5	2.69	2.1
27	16 25.0	16 18.1	60 8.6	2.02	59 43.2	2.19	3 4.6	2.48	3.1
28	16 10.7	16 3.1	59 16.1	-2.30	58 48.0	-2.35	4 1.3	2.25	4.1
29	15 55.4	15 47.7	58 19.6	2.36	57 51.5	2.32	4 52.8	2.04	5.1
30	15 40.2	15 33.1	57 24.0	2.24	56 57.7	2.13	5 39.9	1.89	6.1
31	15 26.3	15 20.0	56 32.8	-2.00	56 9.6	-1.86	6 24.0	1.80	7.1

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 1.					WEDNESDAY 3.				
0	h m s	a	S. ° ' "	"	0	h m s	a	S. ° ' "	"
0	20 40 58.10	2.2306	17 39 42.4	11.542	0	22 20 50.12	1.9588	7 18 41.4	13.837
1	20 43 11.72	2.2233	17 28 7.5	11.622	1	22 22 47.54	1.9552	7 4 50.6	13.855
2	20 45 24.90	2.2161	17 16 27.8	11.701	2	22 24 44.74	1.9515	6 50 58.8	13.872
3	20 47 37.66	2.2090	17 4 43.4	11.778	3	22 26 41.72	1.9478	6 37 6.0	13.888
4	20 49 49.98	2.2018	16 52 54.4	11.853	4	22 28 38.48	1.9443	6 23 12.2	13.904
5	20 52 1.88	2.1948	16 41 1.0	11.928	5	22 30 35.03	1.9408	6 9 17.5	13.918
6	20 54 13.36	2.1878	16 29 3.1	12.001	6	22 32 31.38	1.9375	5 55 22.0	13.931
7	20 56 24.42	2.1809	16 17 0.9	12.072	7	22 34 27.53	1.9343	5 41 25.8	13.943
8	20 58 35.07	2.1741	16 4 54.5	12.141	8	22 36 23.49	1.9310	5 27 28.8	13.955
9	21 0 45.31	2.1673	15 52 44.0	12.209	9	22 38 19.25	1.9278	5 13 31.2	13.965
10	21 2 55.14	2.1605	15 40 29.4	12.276	10	22 40 14.83	1.9248	4 59 33.0	13.975
11	21 5 4.57	2.1538	15 28 10.9	12.341	11	22 42 10.22	1.9218	4 45 34.2	13.983
12	21 7 13.60	2.1473	15 15 48.5	12.405	12	22 44 5.44	1.9189	4 31 35.0	13.990
13	21 9 22.24	2.1408	15 3 22.3	12.467	13	22 46 0.49	1.9160	4 17 35.4	13.997
14	21 11 30.49	2.1343	14 50 52.5	12.528	14	22 47 55.38	1.9134	4 3 35.4	14.003
15	21 13 38.35	2.1278	14 38 19.0	12.588	15	22 49 50.10	1.9107	3 49 35.1	14.007
16	21 15 45.83	2.1215	14 25 42.0	12.645	16	22 51 44.66	1.9081	3 35 34.6	14.010
17	21 17 52.93	2.1152	14 13 1.6	12.702	17	22 53 39.07	1.9057	3 21 33.9	14.013
18	21 19 59.65	2.1090	14 0 17.8	12.758	18	22 55 33.34	1.9033	3 7 33.0	14.015
19	21 22 6.01	2.1029	13 47 30.7	12.812	19	22 57 27.46	1.9008	2 53 32.1	14.016
20	21 24 12.00	2.0968	13 34 40.4	12.864	20	22 59 21.44	1.8986	2 39 31.1	14.016
21	21 26 17.63	2.0908	13 21 47.0	12.916	21	23 1 15.29	1.8964	2 25 30.2	14.015
22	21 28 22.90	2.0849	13 8 50.5	12.966	22	23 3 9.01	1.8943	2 11 29.3	14.013
23	21 30 27.82	2.0791	S. 12 55 51.1	13.014	23	23 5 2.60	1.8922	S. 1 57 28.6	14.010
TUESDAY 2.					THURSDAY 4.				
0	21 32 32.39	2.0733	S. 12 42 48.8	13.062	0	23 6 56.07	1.8903	S. 1 43 28.1	14.006
1	21 34 36.62	2.0677	12 29 43.7	13.108	1	23 8 49.43	1.8883	1 29 27.9	14.002
2	21 36 40.52	2.0622	12 16 35.9	13.153	2	23 10 42.67	1.8865	1 15 27.9	13.997
3	21 38 44.08	2.0566	12 3 25.4	13.197	3	23 12 35.81	1.8848	1 1 28.3	13.990
4	21 40 47.31	2.0511	11 50 12.3	13.238	4	23 14 28.85	1.8832	0 47 29.1	13.983
5	21 42 50.21	2.0458	11 36 56.8	13.279	5	23 16 21.79	1.8816	0 33 30.3	13.975
6	21 44 52.80	2.0405	11 23 38.8	13.319	6	23 18 14.64	1.8801	0 19 32.1	13.966
7	21 46 55.07	2.0353	11 10 18.5	13.358	7	23 20 7.40	1.8786	S. 0 5 34.4	13.957
8	21 48 57.04	2.0302	10 56 55.9	13.395	8	23 22 0.07	1.8772	N. 0 8 22.7	13.946
9	21 50 58.69	2.0250	10 43 31.1	13.432	9	23 23 52.66	1.8759	0 22 19.1	13.934
10	21 53 0.04	2.0201	10 30 4.1	13.467	10	23 25 45.18	1.8748	0 36 14.8	13.922
11	21 55 1.10	2.0153	10 16 35.1	13.500	11	23 27 37.63	1.8737	0 50 9.7	13.908
12	21 57 1.87	2.0104	10 3 4.1	13.533	12	23 29 30.02	1.8726	1 4 3.8	13.895
13	21 59 2.35	2.0057	9 49 31.2	13.564	13	23 31 22.34	1.8715	1 17 57.1	13.880
14	22 1 2.55	2.0011	9 35 56.4	13.595	14	23 33 14.60	1.8706	1 31 49.4	13.863
15	22 3 2.48	1.9965	9 22 19.8	13.624	15	23 35 6.81	1.8698	1 45 40.7	13.847
16	22 5 2.13	1.9919	9 8 41.5	13.652	16	23 36 58.97	1.8690	1 59 31.1	13.831
17	22 7 1.51	1.9875	8 55 1.6	13.678	17	23 38 51.09	1.8682	2 13 20.4	13.812
18	22 9 0.63	1.9832	8 41 20.1	13.704	18	23 40 43.16	1.8676	2 27 8.5	13.793
19	22 10 59.50	1.9790	8 27 37.1	13.729	19	23 42 35.20	1.8670	2 40 55.5	13.773
20	22 12 58.11	1.9748	8 13 52.6	13.753	20	23 44 27.20	1.8665	2 54 41.3	13.753
21	22 14 56.47	1.9707	8 0 6.7	13.776	21	23 46 19.18	1.8661	3 8 25.9	13.732
22	22 16 54.59	1.9667	7 46 19.5	13.798	22	23 48 11.13	1.8657	3 22 9.1	13.709
23	22 18 52.48	1.9627	7 32 31.0	13.818	23	23 50 3.06	1.8654	3 35 51.0	13.686
24	22 20 50.12	1.9588	S. 7 18 41.4	13.837	24	23 51 54.98	1.8652	N. 3 49 31.4	13.662

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 5.					SUNDAY 7.				
0	h m s		N. ° ' "		0	h m s		N. ° ' "	
0	23 51 54.98	1.8634	3 49 31.4	13.662	0	1 22 20.30	1.9236	14 2 37.5	11.576
1	23 53 46.88	1.8650	4 3 10.4	13.638	1	1 24 15.79	1.9260	14 14 10.3	11.516
2	23 55 38.78	1.8649	4 16 47.9	13.613	2	1 26 11.42	1.9285	14 25 39.4	11.453
3	23 57 30.67	1.8648	4 30 23.9	13.586	3	1 28 7.21	1.9311	14 37 4.6	11.388
4	23 59 22.56	1.8648	4 43 58.2	13.558	4	1 30 3.15	1.9336	14 48 26.0	11.323
5	0 1 14.45	1.8649	4 57 30.9	13.531	5	1 31 59.24	1.9362	14 59 43.4	11.257
6	0 3 6.35	1.8651	5 11 1.9	13.503	6	1 33 55.49	1.9388	15 10 56.8	11.190
7	0 4 58.26	1.8653	5 24 31.2	13.475	7	1 35 51.89	1.9414	15 22 6.2	11.123
8	0 6 50.18	1.8656	5 37 58.6	13.444	8	1 37 48.46	1.9442	15 33 11.5	11.054
9	0 8 42.12	1.8659	5 51 24.2	13.411	9	1 39 45.19	1.9468	15 44 12.7	10.986
10	0 10 34.09	1.8663	6 4 47.9	13.379	10	1 41 42.08	1.9496	15 55 9.8	10.916
11	0 12 26.09	1.8668	6 18 9.7	13.347	11	1 43 39.14	1.9524	16 6 2.6	10.844
12	0 14 18.11	1.8673	6 31 29.5	13.313	12	1 45 36.37	1.9552	16 16 51.1	10.773
13	0 16 10.17	1.8680	6 44 47.3	13.278	13	1 47 33.76	1.9580	16 27 35.3	10.701
14	0 18 2.27	1.8687	6 58 2.9	13.243	14	1 49 31.33	1.9609	16 38 15.2	10.627
15	0 19 54.41	1.8693	7 11 16.4	13.208	15	1 51 29.07	1.9638	16 48 50.6	10.553
16	0 21 46.59	1.8701	7 24 27.8	13.172	16	1 53 26.99	1.9667	16 59 21.6	10.479
17	0 23 38.82	1.8710	7 37 37.0	13.133	17	1 55 25.08	1.9697	17 9 48.1	10.403
18	0 25 31.11	1.8719	7 50 43.8	13.094	18	1 57 23.35	1.9727	17 20 10.0	10.327
19	0 27 23.45	1.8728	8 3 48.3	13.056	19	1 59 21.80	1.9757	17 30 27.3	10.250
20	0 29 15.85	1.8738	8 16 50.5	13.017	20	2 1 20.43	1.9787	17 40 40.0	10.172
21	0 31 8.31	1.8749	8 29 50.3	12.976	21	2 3 19.24	1.9817	17 50 48.0	10.093
22	0 33 0.84	1.8761	8 42 47.6	12.934	22	2 5 18.23	1.9848	18 0 51.2	10.014
23	0 34 53.44	1.8773	N. 8 55 42.4	12.892	23	2 7 17.41	1.9879	N. 18 10 49.7	9.934
SATURDAY 6.					MONDAY 8.				
0	0 36 46.11	1.8785	N. 9 8 34.6	12.848	0	2 9 16.78	1.9910	N. 18 20 43.3	9.853
1	0 38 38.86	1.8798	9 21 24.2	12.805	1	2 11 16.33	1.9941	18 30 32.0	9.771
2	0 40 31.69	1.8812	9 34 11.2	12.761	2	2 13 16.07	1.9972	18 40 15.8	9.689
3	0 42 24.60	1.8826	9 46 55.5	12.715	3	2 15 15.99	2.0003	18 49 54.7	9.606
4	0 44 17.60	1.8840	9 59 37.0	12.669	4	2 17 16.11	2.0035	18 59 28.5	9.522
5	0 46 10.68	1.8855	10 12 15.8	12.622	5	2 19 16.41	2.0067	19 8 57.3	9.437
6	0 48 3.86	1.8872	10 24 51.7	12.574	6	2 21 16.91	2.0099	19 18 20.9	9.351
7	0 49 57.14	1.8888	10 37 24.7	12.526	7	2 23 17.60	2.0131	19 27 39.4	9.265
8	0 51 50.51	1.8904	10 49 54.8	12.477	8	2 25 18.48	2.0163	19 36 52.7	9.178
9	0 53 43.99	1.8922	11 2 21.9	12.426	9	2 27 19.55	2.0194	19 46 0.7	9.090
10	0 55 37.57	1.8939	11 14 45.9	12.375	10	2 29 20.81	2.0227	19 55 3.5	9.002
11	0 57 31.26	1.8957	11 27 6.9	12.323	11	2 31 22.27	2.0258	20 4 0.9	8.912
12	0 59 25.06	1.8976	11 39 24.7	12.271	12	2 33 23.91	2.0290	20 12 52.9	8.822
13	1 1 18.97	1.8995	11 51 39.4	12.218	13	2 35 25.75	2.0323	20 21 39.5	8.731
14	1 3 13.00	1.9015	12 3 50.8	12.163	14	2 37 27.79	2.0356	20 30 20.6	8.639
15	1 5 7.15	1.9035	12 15 59.0	12.108	15	2 39 30.02	2.0388	20 38 56.2	8.547
16	1 7 1.42	1.9056	12 28 3.8	12.053	16	2 41 32.44	2.0420	20 47 26.2	8.453
17	1 8 55.82	1.9077	12 40 5.3	11.997	17	2 43 35.06	2.0452	20 55 50.6	8.359
18	1 10 50.34	1.9098	12 52 3.4	11.939	18	2 45 37.87	2.0484	21 4 9.3	8.265
19	1 12 44.99	1.9120	13 3 58.0	11.881	19	2 47 40.87	2.0517	21 12 22.4	8.170
20	1 14 39.78	1.9143	13 15 49.1	11.823	20	2 49 44.07	2.0549	21 20 29.7	8.074
21	1 16 34.70	1.9165	13 27 36.7	11.763	21	2 51 47.46	2.0581	21 28 31.3	7.978
22	1 18 29.76	1.9188	13 39 20.7	11.702	22	2 53 51.04	2.0613	21 36 27.0	7.880
23	1 20 24.96	1.9212	13 51 1.0	11.640	23	2 55 54.82	2.0646	21 44 16.9	7.782
24	1 22 20.30	1.9236	N. 14 2 37.5	11.578	24	2 57 58.79	2.0677	N. 21 52 0.8	7.683

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 9.					THURSDAY 11.				
0	2 57 58.79	2.0677	N.21 52 0.8	7.083	0	4 40 24.27	2.1847	N.25 55 16.6	2.237
1	3 0 2.95	2.0708	21 59 38.8	7.583	1	4 42 35.39	2.1859	25 57 28.3	2.133
2	3 2 7.29	2.0740	22 7 10.8	7.483	2	4 44 46.58	2.1871	25 59 32.6	2.080
3	3 4 11.83	2.0772	22 14 36.8	7.383	3	4 46 57.84	2.1882	26 1 29.5	1.886
4	3 6 16.56	2.0803	22 21 56.7	7.281	4	4 49 9.16	2.1893	26 3 18.9	1.766
5	3 8 21.47	2.0834	22 29 10.5	7.178	5	4 51 20.55	2.1903	26 5 0.9	1.658
6	3 10 26.57	2.0865	22 36 18.1	7.076	6	4 53 32.00	2.1913	26 6 35.4	1.533
7	3 12 31.85	2.0896	22 43 19.6	6.973	7	4 55 43.50	2.1921	26 8 2.4	1.388
8	3 14 37.32	2.0927	22 50 14.8	6.868	8	4 57 55.05	2.1929	26 9 21.9	1.263
9	3 16 42.97	2.0957	22 57 3.7	6.763	9	5 0 6.65	2.1937	26 10 34.0	1.138
10	3 18 48.80	2.0987	23 3 46.3	6.658	10	5 2 18.29	2.1943	26 11 38.5	1.013
11	3 20 54.81	2.1016	23 10 22.6	6.552	11	5 4 29.97	2.1949	26 12 35.6	0.888
12	3 23 0.99	2.1046	23 16 52.5	6.445	12	5 6 41.68	2.1955	26 13 25.1	0.763
13	3 25 7.36	2.1076	23 23 16.0	6.338	13	5 8 53.43	2.1960	26 14 7.1	0.638
14	3 27 13.90	2.1104	23 29 33.0	6.230	14	5 11 5.20	2.1963	26 14 41.6	0.513
15	3 29 20.61	2.1133	23 35 43.5	6.120	15	5 13 16.99	2.1967	26 15 8.5	0.388
16	3 31 27.50	2.1162	23 41 47.4	6.011	16	5 15 28.81	2.1971	26 15 27.9	0.260
17	3 33 34.56	2.1190	23 47 44.8	5.902	17	5 17 40.64	2.1973	26 15 39.7	0.134
18	3 35 41.78	2.1218	23 53 35.6	5.792	18	5 19 52.48	2.1974	26 15 44.0	+ 0.008
19	3 37 49.17	2.1245	23 59 19.8	5.681	19	5 22 4.33	2.1976	26 15 40.7	- 0.128
20	3 39 56.72	2.1272	24 4 57.3	5.569	20	5 24 16.19	2.1977	26 15 29.9	0.243
21	3 42 4.43	2.1299	24 10 28.1	5.457	21	5 26 28.05	2.1976	26 15 11.5	0.369
22	3 44 12.31	2.1326	24 15 52.1	5.344	22	5 28 39.90	2.1974	26 14 45.6	0.494
23	3 46 20.34	2.1352	N.24 21 9.4	5.231	23	5 30 51.74	2.1972	N.26 14 12.2	0.620
WEDNESDAY 10.					FRIDAY 12.				
0	3 48 28.53	2.1377	N.24 26 19.8	5.117	0	5 33 3.57	2.1970	N.26 13 31.2	0.746
1	3 50 36.87	2.1402	24 31 23.4	5.003	1	5 35 15.38	2.1967	26 12 42.7	0.621
2	3 52 45.36	2.1427	24 36 20.2	4.889	2	5 37 27.18	2.1964	26 11 46.6	0.496
3	3 54 54.00	2.1452	24 41 10.1	4.773	3	5 39 38.95	2.1959	26 10 43.0	0.371
4	3 57 2.78	2.1476	24 45 53.0	4.658	4	5 41 50.69	2.1954	26 9 31.9	0.246
5	3 59 11.71	2.1499	24 50 29.0	4.542	5	5 44 2.40	2.1948	26 8 13.2	0.121
6	4 1 20.77	2.1522	24 54 58.0	4.425	6	5 46 14.07	2.1943	26 6 47.0	0.000
7	4 3 29.97	2.1544	24 59 20.0	4.308	7	5 48 25.71	2.1937	26 5 13.3	0.163
8	4 5 39.30	2.1566	25 3 34.9	4.190	8	5 50 37.31	2.1929	26 3 32.2	0.248
9	4 7 48.76	2.1588	25 7 42.8	4.072	9	5 52 48.86	2.1921	26 1 43.5	0.374
10	4 9 58.35	2.1609	25 11 43.6	3.953	10	5 55 0.36	2.1913	25 59 47.3	0.498
11	4 12 8.07	2.1630	25 15 37.2	3.834	11	5 57 11.81	2.1904	25 57 43.7	0.623
12	4 14 17.91	2.1650	25 19 23.7	3.715	12	5 59 23.21	2.1894	25 55 32.6	0.747
13	4 16 27.87	2.1669	25 23 3.0	3.596	13	6 1 34.54	2.1883	25 53 14.1	0.871
14	4 18 37.94	2.1688	25 26 35.2	3.476	14	6 3 45.81	2.1874	25 50 48.1	0.995
15	4 20 48.12	2.1706	25 30 0.1	3.355	15	6 5 57.01	2.1862	25 48 14.7	1.119
16	4 22 58.41	2.1724	25 33 17.8	3.235	16	6 8 8.15	2.1850	25 45 34.0	1.243
17	4 25 8.81	2.1742	25 36 28.3	3.114	17	6 10 19.21	2.1837	25 42 45.8	1.367
18	4 27 19.31	2.1758	25 39 31.5	2.992	18	6 12 30.19	2.1823	25 39 50.3	1.491
19	4 29 29.91	2.1775	25 42 27.3	2.870	19	6 14 41.09	2.1810	25 36 47.4	1.615
20	4 31 40.61	2.1791	25 45 15.9	2.748	20	6 16 51.91	2.1796	25 33 37.1	1.739
21	4 33 51.40	2.1805	25 47 57.1	2.626	21	6 19 2.64	2.1781	25 30 19.6	1.863
22	4 36 2.27	2.1819	25 50 31.0	2.503	22	6 21 13.28	2.1766	25 26 54.7	1.987
23	4 38 13.23	2.1833	25 52 57.5	2.380	23	6 23 23.83	2.1750	25 23 22.5	2.111
24	4 40 24.27	2.1847	N.25 55 16.6	2.257	24	6 25 34.28	2.1734	N.25 19 43.0	2.235

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 13.					MONDAY 15.				
0	6 25 34.28	2.1734	N.25 19 43.0	3.718	0	8 7 24.14	2.0626	N.20 9 54.7	8.994
1	6 27 44.64	2.1718	25 15 56.3	3.838	1	8 9 27.82	2.0608	20 0 52.1	9.092
2	6 29 54.90	2.1701	25 12 2.4	3.959	2	8 11 31.36	2.0578	19 51 43.7	9.188
3	6 32 5.05	2.1683	25 8 1.2	4.079	3	8 13 34.75	2.0553	19 42 29.6	9.283
4	6 34 15.09	2.1665	25 3 52.9	4.198	4	8 15 37.99	2.0528	19 33 9.8	9.377
5	6 36 25.03	2.1647	24 59 37.4	4.318	5	8 17 41.08	2.0503	19 23 44.4	9.471
6	6 38 34.86	2.1628	24 55 14.7	4.438	6	8 19 44.03	2.0480	19 14 13.3	9.564
7	6 40 44.57	2.1608	24 50 44.9	4.556	7	8 21 46.84	2.0457	19 4 36.7	9.657
8	6 42 54.16	2.1589	24 46 8.0	4.673	8	8 23 49.51	2.0433	18 54 54.5	9.749
9	6 45 3.64	2.1570	24 41 24.1	4.791	9	8 25 52.03	2.0409	18 45 6.8	9.840
10	6 47 13.00	2.1549	24 36 33.1	4.908	10	8 27 54.42	2.0387	18 35 13.7	9.931
11	6 49 22.23	2.1528	24 31 35.1	5.026	11	8 29 56.67	2.0363	18 25 15.1	10.022
12	6 51 31.33	2.1507	24 26 30.0	5.143	12	8 31 58.78	2.0341	18 15 11.1	10.111
13	6 53 40.31	2.1486	24 21 18.0	5.258	13	8 34 0.76	2.0318	18 5 1.8	10.199
14	6 55 49.16	2.1464	24 15 59.0	5.374	14	8 36 2.60	2.0296	17 54 47.2	10.287
15	6 57 57.88	2.1442	24 10 33.1	5.489	15	8 38 4.31	2.0275	17 44 27.3	10.375
16	7 0 6.47	2.1420	24 5 0.3	5.603	16	8 40 5.90	2.0254	17 34 2.2	10.462
17	7 2 14.92	2.1397	23 59 20.7	5.717	17	8 42 7.36	2.0233	17 23 31.9	10.548
18	7 4 23.23	2.1373	23 53 34.2	5.832	18	8 44 8.69	2.0212	17 12 56.4	10.634
19	7 6 31.40	2.1351	23 47 40.9	5.945	19	8 46 9.90	2.0191	17 2 15.8	10.718
20	7 8 39.44	2.1328	23 41 40.8	6.058	20	8 48 10.98	2.0171	16 51 30.2	10.803
21	7 10 47.34	2.1304	23 35 34.0	6.169	21	8 50 11.95	2.0152	16 40 39.5	10.887
22	7 12 55.09	2.1280	23 29 20.5	6.282	22	8 52 12.80	2.0132	16 29 43.8	10.970
23	7 15 2.70	2.1256	N.23 23 0.2	6.393	23	8 54 13.53	2.0113	N.16 18 43.1	11.052
SUNDAY 14.					TUESDAY 16.				
0	7 17 10.16	2.1232	N.23 16 33.3	6.503	0	8 56 14.15	2.0094	N.16 7 37.5	11.133
1	7 19 17.48	2.1208	23 9 59.8	6.614	1	8 58 14.66	2.0076	15 56 27.1	11.214
2	7 21 24.65	2.1183	23 3 19.6	6.724	2	9 0 15.06	2.0058	15 45 11.8	11.295
3	7 23 31.68	2.1158	22 56 32.9	6.833	3	9 2 15.36	2.0041	15 33 51.7	11.374
4	7 25 38.55	2.1133	22 49 39.7	6.942	4	9 4 15.55	2.0024	15 22 26.9	11.453
5	7 27 45.28	2.1109	22 42 39.9	7.050	5	9 6 15.65	2.0008	15 10 57.3	11.532
6	7 29 51.86	2.1083	22 35 33.7	7.157	6	9 8 15.64	1.9991	14 59 23.1	11.608
7	7 31 58.28	2.1058	22 28 21.1	7.263	7	9 10 15.54	1.9976	14 47 44.3	11.686
8	7 34 4.55	2.1033	22 21 2.1	7.370	8	9 12 15.35	1.9961	14 36 0.8	11.763
9	7 36 10.67	2.1008	22 13 36.7	7.477	9	9 14 15.07	1.9946	14 24 12.8	11.837
10	7 38 16.64	2.0983	22 6 4.9	7.584	10	9 16 14.70	1.9932	14 12 20.4	11.912
11	7 40 22.46	2.0957	21 58 26.9	7.686	11	9 18 14.25	1.9918	14 0 23.4	11.987
12	7 42 28.12	2.0931	21 50 42.6	7.790	12	9 20 13.72	1.9905	13 48 22.0	12.060
13	7 44 33.63	2.0906	21 42 52.1	7.894	13	9 22 13.11	1.9892	13 36 16.2	12.138
14	7 46 38.99	2.0880	21 34 55.3	7.997	14	9 24 12.42	1.9879	13 24 6.1	12.204
15	7 48 44.19	2.0854	21 26 52.4	8.100	15	9 26 11.66	1.9868	13 11 51.7	12.276
16	7 50 49.24	2.0828	21 18 43.3	8.202	16	9 28 10.83	1.9857	12 59 33.0	12.347
17	7 52 54.13	2.0803	21 10 28.2	8.303	17	9 30 9.94	1.9846	12 47 10.1	12.416
18	7 54 58.87	2.0778	21 2 7.0	8.403	18	9 32 8.98	1.9836	12 34 43.1	12.485
19	7 57 3.46	2.0753	20 53 39.8	8.503	19	9 34 7.97	1.9827	12 22 11.9	12.554
20	7 59 7.90	2.0728	20 45 6.6	8.603	20	9 36 6.90	1.9818	12 9 36.6	12.622
21	8 1 12.19	2.0702	20 36 27.4	8.702	21	9 38 5.78	1.9809	11 56 57.2	12.689
22	8 3 16.32	2.0677	20 27 42.3	8.800	22	9 40 4.61	1.9802	11 44 13.9	12.755
23	8 5 20.31	2.0652	20 18 51.4	8.897	23	9 42 3.40	1.9795	11 31 26.6	12.822
24	8 7 24.14	2.0626	N.20 9 54.7	8.994	24	9 44 2.15	1.9788	N.11 18 35.3	12.887

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 17.					FRIDAY 19.				
0	9 44 2.15	1.9768	N. 11 18 35.3	12.887	0	11 19 32.55	2.0293	N. 0 0 30.0	15.028
1	9 46 0.86	1.9762	11 5 40.2	12.950	1	11 21 34.40	2.0324	S. 0 14 32.3	15.049
2	9 47 59.53	1.9776	10 52 41.3	13.013	2	11 23 36.44	2.0355	0 29 35.9	15.069
3	9 49 58.17	1.9772	10 39 38.6	13.076	3	11 25 38.66	2.0387	0 44 40.6	15.088
4	9 51 56.79	1.9768	10 26 32.2	13.138	4	11 27 41.08	2.0419	0 59 46.4	15.106
5	9 53 55.38	1.9764	10 13 22.1	13.199	5	11 29 43.69	2.0452	1 14 53.3	15.123
6	9 55 53.96	1.9761	10 0 8.3	13.259	6	11 31 46.50	2.0486	1 30 1.1	15.138
7	9 57 52.51	1.9758	9 46 51.0	13.318	7	11 33 49.52	2.0522	1 45 9.8	15.152
8	9 59 51.06	1.9757	9 33 30.1	13.376	8	11 35 52.76	2.0558	2 0 19.3	15.164
9	10 1 49.60	1.9756	9 20 5.6	13.437	9	11 37 56.21	2.0594	2 15 29.5	15.176
10	10 3 48.13	1.9756	9 6 37.7	13.493	10	11 39 59.89	2.0632	2 30 40.4	15.187
11	10 5 46.67	1.9757	8 53 6.4	13.550	11	11 42 3.79	2.0670	2 45 51.9	15.198
12	10 7 45.21	1.9758	8 39 31.7	13.606	12	11 44 7.93	2.0710	3 1 3.8	15.205
13	10 9 43.76	1.9759	8 25 53.7	13.660	13	11 46 12.31	2.0750	3 16 16.2	15.210
14	10 11 42.32	1.9762	8 12 12.5	13.714	14	11 48 16.93	2.0791	3 31 29.0	15.215
15	10 13 40.90	1.9765	7 58 28.0	13.768	15	11 50 21.80	2.0833	3 46 42.0	15.218
16	10 15 39.50	1.9769	7 44 40.3	13.821	16	11 52 26.93	2.0877	4 1 55.2	15.221
17	10 17 38.13	1.9773	7 30 49.5	13.873	17	11 54 32.32	2.0920	4 17 8.5	15.223
18	10 19 36.78	1.9776	7 16 55.6	13.923	18	11 56 37.97	2.0964	4 32 21.9	15.225
19	10 21 35.47	1.9785	7 2 58.7	13.973	19	11 58 43.89	2.1010	4 47 35.2	15.221
20	10 23 34.20	1.9792	6 48 58.8	14.023	20	12 0 50.09	2.1057	5 2 48.4	15.218
21	10 25 32.97	1.9798	6 34 56.0	14.071	21	12 2 56.57	2.1104	5 18 1.4	15.215
22	10 27 31.78	1.9807	6 20 50.3	14.119	22	12 5 3.34	2.1153	5 33 14.0	15.207
23	10 29 30.65	1.9816	N. 6 6 41.7	14.166	23	12 7 10.40	2.1202	S. 5 48 26.2	15.199
THURSDAY 18.					SATURDAY 20.				
0	10 31 29.57	1.9825	N. 5 52 30.4	14.211	0	12 9 17.76	2.1252	S. 6 3 37.9	15.191
1	10 33 28.55	1.9836	5 38 16.4	14.257	1	12 11 25.42	2.1302	6 18 49.1	15.181
2	10 35 27.60	1.9847	5 23 59.6	14.301	2	12 13 33.38	2.1353	6 33 59.6	15.168
3	10 37 26.72	1.9859	5 9 40.3	14.343	3	12 15 41.66	2.1406	6 49 9.3	15.155
4	10 39 25.91	1.9872	4 55 18.4	14.386	4	12 17 50.25	2.1459	7 4 18.2	15.141
5	10 41 25.18	1.9885	4 40 54.0	14.427	5	12 19 59.17	2.1514	7 19 26.2	15.124
6	10 43 24.53	1.9899	4 26 27.2	14.468	6	12 22 8.42	2.1569	7 34 33.1	15.106
7	10 45 23.97	1.9914	4 11 57.9	14.508	7	12 24 18.00	2.1625	7 49 38.9	15.087
8	10 47 23.50	1.9930	3 57 26.3	14.546	8	12 26 27.92	2.1682	8 4 43.5	15.066
9	10 49 23.13	1.9947	3 42 52.4	14.583	9	12 28 38.18	2.1739	8 19 46.8	15.043
10	10 51 22.86	1.9964	3 28 16.3	14.620	10	12 30 48.79	2.1798	8 34 48.7	15.018
11	10 53 22.70	1.9982	3 13 38.0	14.655	11	12 32 59.75	2.1858	8 49 49.0	14.992
12	10 55 22.64	2.0001	2 58 57.7	14.689	12	12 35 11.08	2.1918	9 4 47.7	14.964
13	10 57 22.71	2.0022	2 44 15.3	14.724	13	12 37 22.77	2.1978	9 19 44.7	14.934
14	10 59 22.90	2.0042	2 29 30.8	14.757	14	12 39 34.82	2.2040	9 34 39.8	14.903
15	11 1 23.21	2.0063	2 14 44.4	14.788	15	12 41 47.25	2.2103	9 49 33.0	14.870
16	11 3 23.66	2.0086	1 59 56.2	14.819	16	12 44 0.05	2.2166	10 4 24.2	14.835
17	11 5 24.24	2.0109	1 45 6.1	14.849	17	12 46 13.24	2.2230	10 19 13.2	14.798
18	11 7 24.97	2.0133	1 30 14.3	14.878	18	12 48 26.81	2.2295	10 33 59.9	14.759
19	11 9 25.84	2.0158	1 15 20.8	14.906	19	12 50 40.78	2.2361	10 48 44.3	14.720
20	11 11 26.86	2.0183	1 0 25.6	14.933	20	12 52 55.14	2.2427	11 3 26.3	14.678
21	11 13 28.04	2.0210	0 45 28.9	14.958	21	12 55 9.90	2.2494	11 18 5.6	14.633
22	11 15 29.38	2.0237	0 30 30.7	14.982	22	12 57 25.07	2.2562	11 32 42.2	14.587
23	11 17 30.88	2.0264	0 15 31.0	15.006	23	12 59 40.65	2.2631	11 47 16.0	14.539
24	11 19 32.55	2.0293	N. 0 0 30.0	15.028	24	1 1 56.64	2.2700	S. 12 1 46.9	14.490

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 21.					TUESDAY 23.				
0	13 1 56.64	2.2700	S. 12 1 46.9	14.490	0	14 59 45.62	2.6438	S. 22 0 25.8	9.623
1	13 4 13.05	2.2770	12 16 14.8	14.438	1	15 2 24.47	2.6511	22 9 58.0	9.439
2	13 6 29.88	2.2840	12 30 39.5	14.384	2	15 5 3.75	2.6583	22 19 20.9	9.302
3	13 8 47.13	2.2912	12 45 0.9	14.329	3	15 7 43.47	2.6655	22 28 34.3	9.143
4	13 11 4.82	2.2984	12 59 19.0	14.272	4	15 10 23.61	2.6726	22 37 38.0	8.981
5	13 13 22.94	2.3057	13 13 33.5	14.212	5	15 13 4.18	2.6796	22 46 32.0	8.818
6	13 15 41.50	2.3130	13 27 44.4	14.151	6	15 15 45.16	2.6865	22 55 16.2	8.653
7	13 18 0.50	2.3204	13 41 51.6	14.088	7	15 18 26.56	2.6934	23 3 50.4	8.486
8	13 20 19.95	2.3276	13 55 54.9	14.021	8	15 21 8.37	2.7001	23 12 14.5	8.317
9	13 22 39.84	2.3353	14 9 54.1	13.953	9	15 23 50.57	2.7066	23 20 28.4	8.146
10	13 25 0.19	2.3429	14 23 49.2	13.883	10	15 26 33.16	2.7130	23 28 32.0	7.973
11	13 27 20.99	2.3504	14 37 40.1	13.812	11	15 29 16.13	2.7193	23 36 25.1	7.798
12	13 29 42.24	2.3581	14 51 26.7	13.739	12	15 31 59.48	2.7256	23 44 7.7	7.622
13	13 32 3.96	2.3658	15 5 8.8	13.663	13	15 34 43.20	2.7317	23 51 39.7	7.443
14	13 34 26.14	2.3736	15 18 46.2	13.584	14	15 37 27.28	2.7376	23 59 0.9	7.263
15	13 36 48.79	2.3814	15 32 18.9	13.504	15	15 40 11.71	2.7433	24 6 11.3	7.082
16	13 39 11.91	2.3893	15 45 46.7	13.422	16	15 42 56.48	2.7490	24 13 10.8	6.899
17	13 41 35.50	2.3971	15 59 9.5	13.337	17	15 45 41.59	2.7545	24 19 59.2	6.714
18	13 43 59.56	2.4050	16 12 27.1	13.249	18	15 48 27.02	2.7598	24 26 36.5	6.528
19	13 46 24.10	2.4130	16 25 39.4	13.161	19	15 51 12.76	2.7649	24 33 2.5	6.340
20	13 48 49.12	2.4210	16 38 46.4	13.070	20	15 53 58.81	2.7699	24 39 17.3	6.152
21	13 51 14.62	2.4290	16 51 47.8	12.976	21	15 56 45.15	2.7747	24 45 20.7	5.961
22	13 53 40.60	2.4370	17 4 43.5	12.881	22	15 59 31.77	2.7793	24 51 12.6	5.768
23	13 56 7.06	2.4451	S. 17 17 33.5	12.783	23	16 2 18.67	2.7838	S. 24 56 52.9	5.575
MONDAY 22.					WEDNESDAY 24.				
0	13 58 34.01	2.4532	S. 17 30 17.5	12.683	0	16 5 5.83	2.7882	S. 25 2 21.6	5.380
1	14 1 1.44	2.4613	17 42 55.5	12.582	1	16 7 53.25	2.7923	25 7 38.5	5.184
2	14 3 29.36	2.4693	17 55 27.3	12.477	2	16 10 40.91	2.7964	25 12 43.7	4.987
3	14 5 57.76	2.4774	18 7 52.7	12.370	3	16 13 28.79	2.7999	25 17 37.0	4.788
4	14 8 26.65	2.4856	18 20 11.7	12.262	4	16 16 16.90	2.8035	25 22 18.3	4.589
5	14 10 56.03	2.4937	18 32 24.1	12.150	5	16 19 5.21	2.8068	25 26 47.7	4.390
6	14 13 25.89	2.5018	18 44 29.7	12.037	6	16 21 53.71	2.8099	25 31 5.1	4.188
7	14 15 56.25	2.5100	18 56 28.5	11.922	7	16 24 42.40	2.8128	25 35 10.3	3.986
8	14 18 27.09	2.5181	19 8 20.3	11.803	8	16 27 31.25	2.8155	25 39 3.4	3.783
9	14 20 58.42	2.5262	19 20 4.9	11.682	9	16 30 20.26	2.8181	25 42 44.3	3.580
10	14 23 30.23	2.5343	19 31 42.2	11.560	10	16 33 9.42	2.8204	25 46 13.0	3.376
11	14 26 2.53	2.5423	19 43 12.1	11.436	11	16 35 58.71	2.8225	25 49 29.4	3.170
12	14 28 35.31	2.5504	19 54 34.5	11.309	12	16 38 48.12	2.8244	25 52 33.4	2.964
13	14 31 8.58	2.5584	20 5 49.2	11.180	13	16 41 37.64	2.8261	25 55 25.7	2.758
14	14 33 42.32	2.5663	20 16 56.1	11.048	14	16 44 27.25	2.8275	25 58 4.3	2.551
15	14 36 16.54	2.5743	20 27 55.0	10.915	15	16 47 16.94	2.8288	26 0 31.2	2.344
16	14 38 51.24	2.5823	20 38 45.9	10.779	16	16 50 6.70	2.8298	26 2 45.6	2.137
17	14 41 26.42	2.5902	20 49 28.5	10.641	17	16 52 56.51	2.8305	26 4 47.6	1.929
18	14 44 2.06	2.5979	21 0 2.8	10.501	18	16 55 46.36	2.8311	26 6 37.1	1.720
19	14 46 38.17	2.6057	21 10 28.6	10.358	19	16 58 36.24	2.8314	26 8 14.0	1.512
20	14 49 14.74	2.6134	21 20 45.8	10.213	20	17 1 26.13	2.8315	26 9 38.5	1.304
21	14 51 51.78	2.6211	21 30 54.2	10.067	21	17 4 16.02	2.8314	26 10 50.5	1.096
22	14 54 29.27	2.6287	21 40 53.8	9.918	22	17 7 5.90	2.8311	26 11 50.0	0.887
23	14 57 7.22	2.6363	21 50 44.4	9.767	23	17 9 55.75	2.8305	26 12 36.9	0.678
24	14 59 45.62	2.6438	S. 22 0 25.8	9.613	24	17 12 45.56	2.8298	S. 26 13 11.4	0.470

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 25.					SATURDAY 27.				
0	17 12 45.56	2.8298	S. 26 13 11.4	0.470	0	19 23 52.67	2.5726	S. 22 50 56.9	8.374
1	17 15 35.32	2.8288	26 13 33.3	0.262	1	19 26 26.77	2.5642	22 42 30.1	8.518
2	17 18 25.01	2.8275	26 13 42.8	-0.054	2	19 29 0.37	2.5557	22 33 54.7	8.662
3	17 21 14.62	2.8260	26 13 39.8	+0.154	3	19 31 33.45	2.5472	22 25 10.8	8.802
4	17 24 4.13	2.8243	26 13 24.3	0.362	4	19 34 6.03	2.5387	22 16 18.6	8.958
5	17 26 53.54	2.8224	26 12 56.4	0.568	5	19 36 38.10	2.5302	22 7 18.2	9.074
6	17 29 42.82	2.8205	26 12 16.1	0.775	6	19 39 9.65	2.5215	21 58 9.7	9.206
7	17 32 31.97	2.8179	26 11 23.4	0.981	7	19 41 40.68	2.5129	21 48 53.2	9.341
8	17 35 20.97	2.8154	26 10 18.4	1.186	8	19 44 11.20	2.5043	21 39 28.8	9.471
9	17 38 9.82	2.8127	26 9 1.1	1.390	9	19 46 41.19	2.4956	21 29 56.7	9.599
10	17 40 58.49	2.8097	26 7 31.6	1.594	10	19 49 10.67	2.4869	21 20 16.9	9.725
11	17 43 46.98	2.8064	26 5 49.8	1.798	11	19 51 39.62	2.4783	21 10 29.7	9.848
12	17 46 35.26	2.8030	26 3 55.8	2.001	12	19 54 8.06	2.4696	21 0 35.1	9.971
13	17 49 23.34	2.7994	26 1 49.7	2.205	13	19 56 35.97	2.4608	20 50 33.2	10.091
14	17 52 11.19	2.7956	25 59 31.5	2.408	14	19 59 3.35	2.4520	20 40 24.2	10.208
15	17 54 58.81	2.7916	25 57 1.3	2.605	15	20 1 30.21	2.4433	20 30 8.2	10.324
16	17 57 46.18	2.7875	25 54 19.2	2.801	16	20 3 56.55	2.4347	20 19 45.3	10.438
17	18 0 33.29	2.7830	25 51 25.2	2.998	17	20 6 22.37	2.4259	20 9 15.7	10.549
18	18 3 20.14	2.7784	25 48 19.4	3.194	18	20 8 47.66	2.4172	19 58 39.4	10.659
19	18 6 6.70	2.7736	25 45 1.9	3.390	19	20 11 12.43	2.4085	19 47 56.6	10.767
20	18 8 52.97	2.7687	25 41 32.6	3.584	20	20 13 36.68	2.3998	19 37 7.3	10.873
21	18 11 38.94	2.7636	25 37 51.8	3.777	21	20 16 0.41	2.3913	19 26 11.8	10.977
22	18 14 24.60	2.7583	25 33 59.4	3.968	22	20 18 23.63	2.3827	19 15 10.1	11.078
23	18 17 9.93	2.7527	S. 25 29 55.6	4.158	23	20 20 46.33	2.3739	S. 19 4 2.4	11.178
FRIDAY 26.					SUNDAY 28.				
0	18 19 54.92	2.7470	S. 25 25 40.4	4.347	0	20 23 8.50	2.3653	S. 18 52 48.8	11.276
1	18 22 39.57	2.7412	25 21 14.0	4.534	1	20 25 30.17	2.3569	18 41 29.3	11.372
2	18 25 23.87	2.7353	25 16 36.3	4.721	2	20 27 51.33	2.3484	18 30 4.2	11.466
3	18 28 7.80	2.7291	25 11 47.5	4.904	3	20 30 11.98	2.3399	18 18 33.5	11.557
4	18 30 51.36	2.7228	25 6 47.8	5.087	4	20 32 32.12	2.3315	18 6 57.3	11.648
5	18 33 34.54	2.7164	25 1 37.1	5.268	5	20 34 51.76	2.3232	17 55 15.7	11.737
6	18 36 17.33	2.7098	24 56 15.6	5.448	6	20 37 10.90	2.3148	17 43 28.9	11.823
7	18 38 59.72	2.7032	24 50 43.3	5.627	7	20 39 29.54	2.3065	17 31 36.9	11.908
8	18 41 41.71	2.6964	24 45 0.4	5.803	8	20 41 47.69	2.2983	17 19 40.0	12.000
9	18 44 23.29	2.6894	24 39 7.0	5.977	9	20 44 5.34	2.2901	17 7 38.1	12.071
10	18 47 4.44	2.6823	24 33 3.2	6.149	10	20 46 22.50	2.2820	16 55 31.5	12.150
11	18 49 45.16	2.6751	24 26 49.1	6.321	11	20 48 39.17	2.2738	16 43 20.1	12.228
12	18 52 25.45	2.6678	24 20 24.7	6.491	12	20 50 55.36	2.2658	16 31 4.2	12.303
13	18 55 5.29	2.6603	24 13 50.2	6.658	13	20 53 11.07	2.2579	16 18 43.8	12.376
14	18 57 44.68	2.6528	24 7 5.8	6.823	14	20 55 26.31	2.2501	16 6 19.1	12.448
15	19 0 23.62	2.6451	24 0 11.5	6.987	15	20 57 41.08	2.2422	15 53 50.1	12.518
16	19 3 2.09	2.6373	23 53 7.4	7.148	16	20 59 55.38	2.2344	15 41 16.9	12.587
17	19 5 40.10	2.6295	23 45 53.7	7.308	17	21 2 9.21	2.2267	15 28 39.7	12.653
18	19 8 17.63	2.6216	23 38 30.4	7.467	18	21 4 22.58	2.2191	15 15 58.5	12.718
19	19 10 54.69	2.6137	23 30 57.7	7.623	19	21 6 35.50	2.2113	15 3 13.5	12.782
20	19 13 31.27	2.6056	23 23 15.7	7.777	20	21 8 47.96	2.2040	14 50 24.7	12.843
21	19 16 7.36	2.5974	23 15 24.5	7.929	21	21 10 59.98	2.1966	14 37 32.3	12.902
22	19 18 42.96	2.5892	23 7 24.2	8.079	22	21 13 11.55	2.1892	14 24 36.3	12.958
23	19 21 18.06	2.5809	22 59 15.0	8.228	23	21 15 22.68	2.1819	14 11 36.9	13.012
24	19 23 52.67	2.5726	S. 22 50 56.9	8.374	24	21 17 33.38	2.1747	S. 13 58 34.2	13.073

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
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MONDAY 29.

	^h ^m ^s	^s	[°] ['] ["]	["]
0	21 17 33.38	2.1747	S. 13 58 34.2	13.073
1	21 19 43.65	2.1676	13 45 28.2	13.127
2	21 21 53.49	2.1605	13 32 19.0	13.178
3	21 24 2.91	2.1536	13 19 6.8	13.229
4	21 26 11.92	2.1467	13 5 51.5	13.278
5	21 28 20.51	2.1398	12 52 33.4	13.325
6	21 30 28.70	2.1331	12 39 12.5	13.371
7	21 32 36.48	2.1264	12 25 48.9	13.415
8	21 34 43.87	2.1198	12 12 22.7	13.458
9	21 36 50.86	2.1133	11 58 53.9	13.500
10	21 38 57.47	2.1069	11 45 22.7	13.540
11	21 41 3.69	2.1006	11 31 49.1	13.579
12	21 43 9.54	2.0943	11 18 13.2	13.616
13	21 45 15.01	2.0882	11 4 35.2	13.652
14	21 47 20.12	2.0822	10 50 55.0	13.687
15	21 49 24.87	2.0762	10 37 12.8	13.719
16	21 51 29.26	2.0703	10 23 28.7	13.751
17	21 53 33.30	2.0644	10 9 42.7	13.782
18	21 55 36.99	2.0587	9 55 54.9	13.811
19	21 57 40.34	2.0530	9 42 5.4	13.838
20	21 59 43.35	2.0474	9 28 14.3	13.865
21	22 1 46.03	2.0420	9 14 21.6	13.890
22	22 3 48.39	2.0367	9 0 27.5	13.914
23	22 5 50.43	2.0314	S. 8 46 31.9	13.938

TUESDAY 30.

	^h ^m ^s	^s	[°] ['] ["]	["]
0	22 7 52.16	2.0262	S. 8 32 35.0	13.959
1	22 9 53.58	2.0211	8 18 36.8	13.979
2	22 11 54.69	2.0160	8 4 37.5	13.998
3	22 13 55.50	2.0111	7 50 37.0	14.017
4	22 15 56.02	2.0063	7 36 35.5	14.033
5	22 17 56.25	2.0015	7 22 33.0	14.049
6	22 19 56.20	1.9968	7 8 29.6	14.064
7	22 21 55.87	1.9923	6 54 25.3	14.078
8	22 23 55.27	1.9878	6 40 20.3	14.089
9	22 25 54.40	1.9833	6 26 14.6	14.101
10	22 27 53.26	1.9789	6 12 8.2	14.112
11	22 29 51.87	1.9747	5 58 1.2	14.121
12	22 31 50.23	1.9707	5 43 53.7	14.128
13	22 33 48.35	1.9666	5 29 45.8	14.135
14	22 35 46.22	1.9626	5 15 37.5	14.142
15	22 37 43.86	1.9587	5 1 28.8	14.147
16	22 39 41.26	1.9548	4 47 19.9	14.150
17	22 41 38.44	1.9512	4 33 10.8	14.153
18	22 43 35.41	1.9477	4 19 1.5	14.155
19	22 45 32.16	1.9441	4 4 52.2	14.156
20	22 47 28.70	1.9406	3 50 42.8	14.156
21	22 49 25.03	1.9372	3 36 33.5	14.155
22	22 51 21.16	1.9339	3 22 24.2	14.153
23	22 53 17.10	1.9308	3 8 15.1	14.150
24	22 55 12.86	1.9277	S. 2 54 6.2	14.147

WEDNESDAY, DECEMBER 1.

	^h ^m ^s	^s	[°] ['] ["]	["]
0	22 55 12.86	1.9277	S. 2 54 6.2	14.147

PHASES OF THE MOON.

		^d ^h ^m
☾	First Quarter	Nov. 1 2 36.9
○	Full Moon	8 21 50.0
☾	Last Quarter	17 2 2.0
●	New Moon	23 21 19.7
☾	First Quarter	30 15 14.5

		^d ^h
☾	Apogee	Nov. 10 21.4
☾	Perigee	24 2.4

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	SUN W.	88 38 22	2838	90 12 1	2853	91 45 20	2869	93 18 18	2884
	SATURN W.	67 27 22	2551	69 7 24	2566	70 47 6	2580	72 26 29	2594
	Antares W.	59 49 41	2487	61 31 13	2501	63 12 25	2515	64 53 17	2530
	α Pegasi E.	47 3 24	2803	45 29 0	2837	43 55 20	2873	42 22 26	2910
	α Arietis E.	88 9 48	2502	86 28 38	2517	84 47 48	2531	83 7 18	2546
2	SUN W.	100 58 16	2961	102 29 18	2975	104 0 2	2990	105 30 27	3004
	SATURN W.	80 38 38	2663	82 16 8	2675	83 53 21	2689	85 30 16	2701
	Antares W.	73 12 42	2599	74 51 38	2613	76 30 15	2626	78 8 35	2639
	α Arietis E.	74 49 48	2617	73 11 16	2630	71 33 2	2644	69 55 7	2657
	Aldebaran E.	107 7 26	2663	105 29 57	2676	103 52 45	2689	102 15 50	2701
3	SUN W.	112 58 13	3073	114 26 56	3086	115 55 23	3099	117 23 34	3111
	SATURN W.	93 30 36	2764	95 5 51	2776	96 40 50	2788	98 15 34	2799
	Antares W.	86 15 56	2701	87 52 35	2713	89 28 58	2724	91 5 6	2735
	α Aquilæ W.	41 46 41	4319	42 53 16	4334	44 1 10	4158	45 10 16	4090
	α Arietis E.	61 49 56	2722	60 13 45	2735	58 37 51	2747	57 2 13	2758
	Aldebaran E.	94 15 14	2760	92 39 54	2772	91 4 49	2783	89 29 59	2794
4	SUN W.	124 40 43	3173	126 7 25	3184	127 33 53	3195	129 0 8	3207
	SATURN W.	106 5 33	2855	107 38 50	2865	109 11 54	2875	110 44 45	2885
	Antares W.	99 2 10	2788	100 36 53	2798	102 11 24	2808	103 45 42	2817
	α Aquilæ W.	51 10 7	3847	52 24 21	3812	53 39 11	3781	54 54 33	3753
	α Arietis E.	49 7 56	2818	47 33 51	2828	46 0 0	2840	44 26 24	2851
	Aldebaran E.	81 39 25	2848	80 6 0	2859	78 32 49	2869	76 59 51	2880
5	α Aquilæ W.	61 17 43	3653	62 35 20	3639	63 53 12	3627	65 11 17	3616
	Fomalhaut W.	36 52 58	4110	38 2 50	4033	39 13 57	3966	40 26 10	3907
	α Arietis E.	36 42 3	2909	35 9 56	2921	33 38 4	2933	32 6 27	2946
	Aldebaran E.	69 18 14	2929	67 46 32	2939	66 15 3	2949	64 43 46	2959
	Pollux E.	111 22 42	2887	109 50 7	2895	108 17 42	2902	106 45 26	2910
6	α Aquilæ W.	71 44 11	3580	73 3 7	3576	74 22 7	3574	75 41 10	3571
	Fomalhaut W.	46 40 19	3695	47 57 11	3665	49 14 35	3639	50 32 27	3614
	Aldebaran E.	57 10 24	3007	55 40 20	3017	54 10 28	3026	52 40 48	3037
	Pollux E.	99 6 27	2946	97 35 6	2952	96 3 53	2958	94 32 48	2965
7	α Aquilæ W.	82 16 49	3571	83 35 55	3572	84 55 0	3575	86 14 2	3577
	Fomalhaut W.	57 7 28	3528	58 27 21	3516	59 47 27	3506	61 7 45	3496
	α Pegasi W.	34 31 4	3492	35 51 37	3461	37 12 45	3434	38 34 23	3410
	Aldebaran E.	45 15 45	3092	43 47 26	3105	42 19 22	3118	40 51 34	3132
	Pollux E.	86 59 19	2995	85 29 0	3000	83 58 47	3005	82 28 41	3011
8	α Aquilæ W.	92 48 10	3602	94 6 42	3608	95 25 8	3615	96 43 26	3623
	Fomalhaut W.	67 51 36	3462	69 12 43	3457	70 33 55	3454	71 55 11	3450
	α Pegasi W.	45 28 20	3328	46 51 59	3318	48 15 50	3308	49 39 52	3300
	Pollux E.	74 59 50	3037	73 30 23	3041	72 1 1	3046	70 31 45	3051
	Regulus E.	111 54 23	3018	110 24 32	3022	108 54 46	3026	107 25 5	3030
9	α Aquilæ W.	103 12 39	3671	104 29 57	3682	105 47 3	3694	107 3 56	3709
	Fomalhaut W.	78 42 13	3442	80 3 42	3442	81 25 11	3442	82 46 40	3443
	α Pegasi W.	56 42 11	3270	58 6 58	3265	59 31 50	3262	60 56 46	3259

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LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	SUN W.	94 50 57	2900	96 23 16	2916	97 55 15	2931	99 26 55	2946
	SATURN W.	74 5 32	2608	75 44 16	2621	77 22 42	2635	79 0 49	2649
	Antares W.	66 33 49	2344	68 14 1	2358	69 53 54	2372	71 33 28	2386
	α Pegasi E.	40 50 20	2951	39 19 6	2995	37 48 48	3043	36 19 29	3096
	α Arietis E.	81 27 9	2361	79 47 20	2374	78 7 50	2388	76 28 39	2603
2	SUN W.	107 0 35	3018	108 30 25	3032	109 59 58	3046	111 29 14	3060
	SATURN W.	87 6 54	2715	88 43 14	2727	90 19 18	2740	91 55 5	2752
	Antares W.	79 46 37	2652	81 24 22	2664	83 1 50	2677	84 39 1	2689
	α Arietis E.	68 17 30	2671	66 40 11	2684	65 3 9	2696	63 26 24	2709
	Aldebaran E.	100 39 11	2713	99 2 48	2725	97 26 41	2737	95 50 50	2748
3	SUN W.	118 51 30	3124	120 19 10	3136	121 46 36	3148	123 13 47	3161
	SATURN W.	99 50 3	2811	101 24 17	2821	102 58 17	2833	104 32 2	2844
	Antares W.	92 41 0	2746	94 16 39	2757	95 52 3	2768	97 27 13	2778
	α Aquilæ W.	46 20 27	4030	47 31 37	3976	48 43 40	3927	49 56 32	3885
	α Arietis E.	55 26 50	2770	53 51 43	2782	52 16 52	2794	50 42 16	2806
	Aldebaran E.	87 55 23	2805	86 21 2	2817	84 46 56	2828	83 13 4	2838
4	SUN W.	130 26 9	3218	131 51 57	3229	133 17 32	3240	134 42 54	3251
	SATURN W.	112 17 23	2895	113 49 48	2905	115 22 1	2915	116 54 1	2924
	Antares W.	105 19 48	2827	106 53 41	2835	108 27 23	2844	110 0 54	2853
	α Aquilæ W.	56 10 24	3728	57 26 41	3707	58 43 21	3686	60 0 23	3669
	α Arietis E.	42 53 2	2862	41 19 55	2874	39 47 3	2885	38 14 25	2898
	Aldebaran E.	75 27 6	2890	73 54 34	2900	72 22 15	2909	70 50 8	2920
5	α Aquilæ W.	66 29 34	3607	67 48 1	3598	69 6 37	3591	70 25 21	3586
	Fomalhaut W.	41 39 23	3855	42 53 29	3807	44 8 24	3765	45 24 2	3728
	α Arietis E.	30 35 7	2960	29 4 4	2973	27 33 18	2989	26 2 52	3006
	Aldebaran E.	63 12 42	2968	61 41 49	2978	60 11 9	2987	58 40 40	2997
	Pollux E.	105 13 20	2917	103 41 23	2925	102 9 36	2931	100 37 57	2939
6	α Aquilæ W.	77 0 16	3370	78 19 23	3368	79 38 32	3368	80 57 41	3369
	Fomalhaut W.	51 50 46	3393	53 9 28	3375	54 28 30	3357	55 47 51	3343
	Aldebaran E.	51 11 21	3047	49 42 7	3058	48 13 6	3069	46 44 18	3081
	Pollux E.	93 1 51	2971	91 31 2	2977	90 0 20	2983	88 29 46	2989
7	α Aquilæ W.	87 33 1	3381	88 51 56	3386	90 10 46	3390	91 29 31	3396
	Fomalhaut W.	62 28 14	3487	63 48 53	3480	65 9 40	3472	66 30 35	3467
	α Pegasi W.	39 56 28	3389	41 18 57	3371	42 41 47	3355	44 4 55	3340
	Aldebaran E.	39 24 2	3146	37 56 48	3161	36 29 52	3178	35 3 16	3197
	Pollux E.	80 58 42	3016	79 28 49	3022	77 59 3	3026	76 29 23	3032
8	α Aquilæ W.	98 1 36	3631	99 19 37	3640	100 37 28	3649	101 55 9	3660
	Fomalhaut W.	73 16 31	3448	74 37 53	3446	75 59 18	3444	77 20 45	3443
	α Pegasi W.	51 4 4	3292	52 28 25	3285	53 52 54	3280	55 17 29	3274
	Pollux E.	69 2 35	3055	67 33 30	3060	66 4 31	3064	64 35 37	3069
	Regulus E.	105 55 29	3054	104 25 58	3037	102 56 31	3041	101 27 9	3045
9	α Aquilæ W.	108 20 34	3723	109 36 57	3737	110 53 5	3753	112 8 56	3771
	Fomalhaut W.	84 8 8	3443	85 29 36	3445	86 51 2	3446	88 12 26	3447
	α Pegasi W.	62 21 45	3256	63 46 48	3254	65 11 53	3252	66 37 1	3249

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LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
9	Pollux E.	63 6 49	3073	61 38 6	3077	60 9 28	3081	58 40 55	3084
	Regulus E.	99 57 52	3048	98 28 39	3051	96 59 29	3055	95 30 24	3057
10	Fomalhaut W.	89 33 49	3450	90 55 9	3452	92 16 27	3455	93 37 41	3458
	α Pegasi W.	68 2 12	3247	69 27 25	3247	70 52 39	3245	72 17 55	3243
	α Arietis W.	24 30 12	3156	25 57 14	3149	27 24 24	3143	28 51 42	3137
	Pollux E.	51 19 20	3104	49 51 15	3108	48 23 15	3112	46 55 20	3115
	Regulus E.	88 5 46	3069	86 36 59	3072	85 8 15	3073	83 39 33	3075
11	Fomalhaut W.	100 22 55	3478	101 43 44	3482	103 4 28	3488	104 25 6	3494
	α Pegasi W.	79 24 37	3238	80 50 1	3237	82 15 26	3236	83 40 52	3235
	α Arietis W.	36 9 30	3121	37 37 14	3118	39 5 2	3115	40 32 53	3114
	Pollux E.	39 36 55	3136	38 9 29	3141	36 42 9	3145	35 14 54	3151
	Regulus E.	76 16 30	3081	74 47 57	3082	73 19 25	3082	71 50 53	3082
	JUPITER E.	110 31 11	3164	109 4 19	3165	107 37 28	3165	106 10 37	3164
12	α Pegasi W.	90 48 22	3230	92 13 56	3229	93 39 31	3227	95 5 8	3226
	α Arietis W.	47 52 49	3101	49 20 58	3098	50 49 10	3095	52 17 26	3092
	Regulus E.	64 28 11	3079	62 59 36	3078	61 30 59	3076	60 2 20	3074
	JUPITER E.	98 56 9	3159	97 29 11	3158	96 2 11	3156	94 35 9	3153
	Spica E.	118 31 13	3079	117 2 38	3078	115 34 1	3076	114 5 22	3073
13	α Pegasi W.	102 13 37	3218	103 39 25	3216	105 5 15	3214	106 31 7	3213
	α Arietis W.	59 39 45	3073	61 8 27	3069	62 37 15	3065	64 6 8	3069
	Aldebaran W.	28 22 45	3312	29 46 43	3285	31 11 12	3261	32 36 9	3239
	Regulus E.	52 38 27	3061	51 9 30	3058	49 40 29	3054	48 11 23	3050
	JUPITER E.	87 19 11	3138	85 51 48	3134	84 24 20	3130	82 56 47	3126
	Spica E.	106 41 19	3058	105 12 18	3055	103 43 13	3050	102 14 2	3046
	VENUS E.	112 56 2	3571	111 36 56	3566	110 17 45	3561	108 58 28	3555
14	α Arietis W.	71 32 16	3029	73 1 53	3022	74 31 38	3015	76 1 32	3007
	Aldebaran W.	39 46 39	3153	41 13 44	3138	42 41 8	3124	44 8 49	3110
	Regulus E.	40 44 31	3026	39 14 50	3019	37 45 1	3014	36 15 5	3008
	JUPITER E.	75 37 34	3099	74 9 23	3092	72 41 4	3085	71 12 36	3078
	Spica E.	94 46 35	3018	93 16 44	3011	91 46 45	3004	90 16 37	2996
	VENUS E.	102 20 23	3522	101 0 23	3515	99 40 15	3506	98 19 58	3497
	SUN E.	124 44 26	3415	123 22 27	3407	122 0 18	3399	120 38 0	3391
15	α Arietis W.	83 33 36	2964	85 4 34	2954	86 35 45	2943	88 7 9	2933
	Aldebaran W.	51 31 25	3042	53 0 46	3029	54 30 23	3015	56 0 17	3001
	JUPITER E.	63 47 58	3037	62 18 31	3028	60 48 53	3018	59 19 3	3009
	Spica E.	82 43 27	2954	81 12 16	2944	79 40 53	2934	78 9 17	2924
	VENUS E.	91 36 1	3450	90 14 41	3438	88 53 8	3428	87 31 23	3415
	SUN E.	113 43 55	3341	112 20 31	3330	110 56 54	3319	109 33 4	3307
16	α Arietis W.	95 47 37	2875	97 20 28	2862	98 53 36	2849	100 27 0	2835
	Aldebaran W.	63 34 7	2931	65 5 47	2916	66 37 45	2901	68 10 2	2887
	Pollux W.	21 32 32	3030	23 2 8	2997	24 32 24	2968	26 3 17	2940
	JUPITER E.	51 46 45	2956	50 15 37	2944	48 44 14	2933	47 12 37	2920
	Spica E.	70 27 48	2866	68 54 45	2852	67 21 25	2840	65 47 49	2826
	VENUS E.	80 39 7	3351	79 15 55	3337	77 52 26	3323	76 28 41	3307
	SUN E.	102 30 20	3242	101 5 0	3228	99 39 24	3214	98 13 31	3198

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		° ' "		° ' "		° ' "		° ' "	
9	Pollux E.	57 12 26	3089	55 44 3	3092	54 15 44	3096	52 47 30	3100
	Regulus E.	94 1 22	3060	92 32 23	3063	91 3 28	3065	89 34 36	3067
10	Fomalhaut W.	94 58 52	3462	96 19 59	3465	97 41 2	3469	99 2 1	3473
	α Pegasi W.	73 43 13	3242	75 8 32	3241	76 33 53	3241	77 59 14	3239
	α Arietis W.	30 19 7	3133	31 46 37	3129	33 14 11	3126	34 41 49	3124
	Pollux E.	45 27 29	3119	43 59 43	3124	42 32 2	3128	41 4 26	3132
	Regulus E.	82 10 53	3077	80 42 15	3078	79 13 39	3079	77 45 4	3080
11	Fomalhaut W.	105 45 37	3499	107 6 2	3506	108 26 20	3513	109 46 30	3519
	α Pegasi W.	85 6 20	3235	86 31 48	3233	87 57 18	3232	89 22 49	3231
	α Arietis W.	42 0 46	3111	43 28 42	3109	44 56 41	3106	46 24 43	3103
	Pollux E.	33 47 46	3156	32 20 44	3163	30 53 51	3171	29 27 7	3179
	Regulus E.	70 22 22	3082	68 53 50	3082	67 25 18	3081	65 56 45	3080
	JUPITER E.	104 43 45	3163	103 16 52	3163	101 49 59	3163	100 23 5	3161
12	α Pegasi W.	96 30 46	3225	97 56 26	3223	99 22 8	3222	100 47 51	3220
	α Arietis W.	53 45 45	3089	55 14 8	3085	56 42 36	3082	58 11 8	3078
	Regulus E.	58 33 39	3072	57 4 55	3070	55 36 9	3068	54 7 20	3065
	JUPITER E.	93 8 4	3151	91 40 56	3148	90 13 45	3145	88 46 30	3142
	Spica E.	112 36 40	3071	111 7 55	3069	109 39 7	3065	108 10 15	3062
13	α Pegasi W.	107 57 1	3210	109 22 58	3209	110 48 57	3207	112 14 58	3204
	α Arietis W.	65 35 8	3054	67 4 14	3048	68 33 27	3042	70 2 48	3036
	Aldebaran W.	34 1 32	3220	35 27 18	3202	36 53 25	3185	38 19 52	3168
	Regulus E.	46 42 12	3046	45 12 56	3041	43 43 34	3036	42 14 6	3030
	JUPITER E.	81 29 9	3121	80 1 25	3116	78 33 35	3110	77 5 38	3105
	Spica E.	100 44 46	3040	99 15 23	3035	97 45 54	3030	96 16 18	3024
	VENUS E.	107 39 5	3550	106 19 36	3543	104 59 59	3536	103 40 15	3529
14	α Arietis W.	77 31 36	2999	79 1 50	2991	80 32 14	2982	82 2 49	2973
	Aldebaran W.	45 36 47	3096	47 5 2	3082	48 33 33	3069	50 2 21	3056
	Regulus E.	34 45 2	3001	33 14 51	2994	31 44 31	2988	30 14 3	2981
	JUPITER E.	69 44 0	3070	68 15 14	3063	66 46 19	3055	65 17 14	3046
	Spica E.	88 46 19	2989	87 15 52	2980	85 45 14	2972	84 14 26	2963
	VENUS E.	96 59 31	3489	95 38 55	3480	94 18 8	3470	92 57 10	3460
	SUN E.	119 15 33	3381	117 52 55	3372	116 30 7	3362	115 7 7	3351
15	α Arietis W.	89 38 46	2922	91 10 37	2911	92 42 42	2899	94 15 2	2887
	Aldebaran W.	57 30 28	2988	59 0 56	2973	60 31 42	2960	62 2 45	2945
	JUPITER E.	57 49 1	2999	56 18 47	2989	54 48 20	2977	53 17 39	2967
	Spica E.	76 37 28	2912	75 5 25	2901	73 33 8	2890	72 0 36	2877
	VENUS E.	86 9 24	3404	84 47 12	3391	83 24 45	3379	82 2 4	3365
	SUN E.	108 9 1	3294	106 44 43	3282	105 20 11	3269	103 55 23	3256
16	α Arietis W.	102 0 42	2821	103 34 42	2808	105 9 0	2793	106 43 37	2779
	Aldebaran W.	69 42 38	2871	71 15 34	2855	72 48 50	2840	74 22 26	2824
	Pollux W.	27 34 45	2914	29 6 46	2889	30 39 19	2866	32 12 22	2842
	JUPITER E.	45 40 44	2909	44 8 36	2897	42 36 13	2885	41 3 35	2873
	Spica E.	64 13 55	2812	62 39 43	2798	61 5 13	2784	59 30 24	2769
	VENUS E.	75 4 38	3293	73 40 18	3277	72 15 40	3262	70 50 44	3245
	SUN E.	96 47 20	3183	95 20 51	3168	93 54 3	3151	92 26 55	3135

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17	Aldebaran W.	75 56 23	2808	77 30 41	2791	79 5 21	2775	80 40 22	2757
	Pollux W.	33 45 55	2821	35 19 56	2799	36 54 25	2779	38 29 21	2758
	JUPITER E.	39 30 41	2861	37 57 32	2849	36 24 8	2838	34 50 29	2826
	Spica E.	57 55 15	2754	56 19 47	2738	54 43 58	2723	53 7 49	2707
	VENUS E.	69 25 28	3229	67 59 53	3212	66 33 58	3194	65 7 42	3178
	SUN E.	90 59 28	3118	89 31 40	3101	88 3 32	3083	86 35 2	3066
18	Aldebaran W.	88 41 10	2670	90 18 31	2653	91 56 14	2635	93 34 22	2616
	Pollux W.	46 30 48	2656	48 8 27	2636	49 46 33	2616	51 25 6	2596
	Spica E.	45 1 35	2624	43 23 13	2607	41 44 27	2590	40 5 18	2572
	VENUS E.	57 51 7	3087	56 22 42	3069	54 53 55	3051	53 24 45	3032
	SUN E.	79 6 59	2973	77 36 13	2954	76 5 2	2934	74 33 26	2915
19	Aldebaran W.	101 51 15	2526	103 31 52	2507	105 12 55	2489	106 54 23	2472
	Pollux W.	59 44 47	2495	61 26 7	2476	63 7 54	2456	64 50 9	2436
	VENUS E.	45 43 10	2940	44 21 42	2923	42 49 52	2905	41 17 39	2887
	SUN E.	66 49 11	2815	65 15 2	2794	63 40 28	2775	62 5 27	2755
20	Pollux W.	73 28 26	2339	75 13 29	2320	76 58 59	2301	78 44 57	2283
	Regulus W.	36 27 16	2329	38 12 33	2309	39 58 19	2289	41 44 34	2271
	SUN E.	54 3 46	2656	52 26 7	2637	50 48 2	2618	49 9 32	2600
21	Pollux W.	87 41 20	2196	89 29 53	2180	91 18 51	2165	93 8 12	2149
	Regulus W.	50 42 36	2182	52 31 31	2165	54 20 51	2149	56 10 36	2134
	SUN E.	40 50 55	2515	39 10 2	2499	37 28 48	2485	35 47 14	2472
25	SUN W.	16 10 56	2417	17 54 7	2401	19 37 40	2381	21 21 28	2364
	Fomalhaut E.	73 1 7	2412	71 17 50	2400	69 34 57	2448	67 52 30	2469
	α Pegasi E.	93 34 29	2134	91 44 21	2140	89 54 23	2147	88 4 36	2156
26	SUN W.	30 1 1	2401	31 44 35	2409	33 27 57	2419	35 11 4	2430
	Fomalhaut E.	59 28 35	2607	57 49 49	2642	56 11 51	2681	54 34 45	2723
	α Pegasi E.	78 59 25	2214	77 11 18	2228	75 23 32	2244	73 36 10	2260
	α Arietis E.	121 36 21	2072	119 44 38	2084	117 53 14	2096	116 2 8	2109
27	SUN W.	43 42 18	2499	45 23 32	2515	47 4 25	2531	48 44 55	2548
	α Pegasi E.	64 45 50	2357	63 1 13	2380	61 17 9	2403	59 33 38	2427
	α Arietis E.	106 51 46	2180	105 2 48	2195	103 14 13	2212	101 26 3	2228
28	SUN W.	57 1 26	2638	58 39 30	2657	60 17 8	2675	61 54 21	2695
	α Pegasi E.	51 5 17	2568	49 25 38	2601	47 46 44	2635	46 8 37	2672
	α Arietis E.	92 31 25	2315	90 45 47	2332	89 0 34	2350	87 15 47	2368
	Aldebaran E.	124 39 8	2383	122 55 9	2398	121 11 32	2413	119 28 16	2429
29	SUN W.	69 54 1	2792	71 28 40	2811	73 2 54	2830	74 36 43	2849
	α Arietis E.	78 38 31	2461	76 56 23	2479	75 14 40	2498	73 33 24	2516
	Aldebaran E.	110 57 37	2511	109 16 39	2527	107 36 4	2545	105 55 53	2561
30	SUN W.	82 19 38	2944	83 51 1	2962	85 22 1	2980	86 52 39	2998
	α Aquilæ W.	39 19 3	4428	40 23 59	4321	41 30 32	4228	42 38 32	4145
	α Arietis E.	65 13 20	2607	63 34 34	2644	61 56 11	2641	60 18 12	2658
	Aldebaran E.	97 40 47	2646	96 2 55	2663	94 25 25	2680	92 48 18	2695

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17	Aldebaran W.	82 15 46	2741	83 51 32	2723	85 27 41	2705	87 4 14	2688
	Pollux W.	40 4 44	2738	41 40 34	2716	43 16 52	2697	44 53 36	2676
	JUPITER E.	33 16 35	2815	31 42 27	2806	30 8 7	2798	28 33 36	2790
	Spica E.	51 31 18	2691	49 54 26	2674	48 17 11	2657	46 39 34	2641
	VENUS E.	63 41 6	3160	62 14 9	3142	60 46 50	3124	59 19 10	3105
	SUN E.	85 6 11	3047	83 36 57	3030	82 7 21	3011	80 37 22	2992
18	Aldebaran W.	95 12 55	2398	96 51 53	2380	98 31 15	2361	100 11 3	2344
	Pollux W.	53 4 7	2575	54 43 36	2556	56 23 32	2535	58 3 56	2516
	Spica E.	38 25 45	2555	36 45 48	2538	35 5 27	2520	33 24 42	2504
	VENUS E.	51 55 12	3014	50 25 16	2995	48 54 57	2977	47 24 15	2958
	SUN E.	73 1 26	2895	71 29 1	2875	69 56 10	2855	68 22 53	2835
19	Aldebaran W.	108 36 16	2454	110 18 34	2436	112 1 17	2419	113 44 24	2403
	Pollux W.	66 34 52	2417	68 16 3	2396	69 59 43	2377	71 43 51	2358
	VENUS E.	39 45 4	2871	38 12 8	2855	36 38 52	2841	35 5 17	2826
	SUN E.	60 30 0	2735	58 54 6	2715	57 17 46	2695	55 40 59	2675
20	Pollux W.	80 31 21	2265	82 18 12	2247	84 5 29	2230	85 53 12	2213
	Regulus W.	43 31 16	2252	45 18 26	2234	47 6 3	2216	48 54 7	2199
	SUN E.	47 30 37	2582	45 51 17	2564	44 11 33	2547	42 31 25	2531
21	Pollux W.	94 57 56	2135	96 48 2	2120	98 38 30	2107	100 29 18	2094
	Regulus W.	58 0 44	2118	59 51 15	2103	61 42 9	2090	63 33 24	2077
	SUN E.	34 5 21	2460	32 23 11	2448	30 40 44	2438	28 58 3	2428
25	SUN W.	23 5 25	2382	24 49 25	2384	26 33 23	2387	28 17 16	2393
	Fomalhaut E.	66 10 33	2492	64 29 8	2517	62 48 18	2544	61 8 6	2574
	α Pegasi E.	86 15 2	2166	84 25 43	2176	82 36 39	2188	80 47 53	2200
26	SUN W.	36 53 56	2443	38 36 30	2455	40 18 46	2470	42 0 42	2484
	Fomalhaut E.	52 58 36	2769	51 23 27	2818	49 49 22	2872	48 16 27	2931
	α Pegasi E.	71 49 12	2277	70 2 39	2296	68 16 34	2315	66 30 57	2336
	α Arietis E.	114 11 22	2122	112 20 56	2136	110 30 51	2149	108 41 7	2165
27	SUN W.	50 25 2	2565	52 4 45	2583	53 44 3	2601	55 22 57	2619
	α Pegasi E.	57 50 42	2453	56 8 23	2480	54 26 41	2508	52 45 39	2537
	α Arietis E.	99 38 17	2245	97 50 56	2262	96 4 0	2279	94 17 30	2296
28	SUN W.	63 31 8	2713	65 7 30	2733	66 43 26	2753	68 18 56	2772
	α Pegasi E.	44 31 19	2710	42 54 53	2751	41 19 21	2795	39 44 46	2842
	α Arietis E.	85 31 27	2387	83 47 33	2405	82 4 6	2424	80 21 5	2443
	Aldebaran E.	117 45 23	2445	116 2 52	2461	114 20 44	2477	112 38 59	2494
29	SUN W.	76 10 7	2869	77 43 6	2887	79 15 41	2907	80 47 51	2925
	α Arietis E.	71 52 33	2535	70 12 8	2552	68 32 7	2570	66 52 31	2588
	Aldebaran E.	104 16 5	2579	102 36 41	2596	100 57 40	2612	99 19 2	2629
30	SUN W.	88 22 54	3016	89 52 47	3033	91 22 19	3051	92 51 29	3067
	α Aquilæ W.	43 47 50	4074	44 58 17	4010	46 9 47	3954	47 22 12	3904
	α Arietis E.	58 40 36	2675	57 3 23	2692	55 26 33	2709	53 50 5	2726
	Aldebaran E.	91 11 32	2712	89 35 8	2729	87 59 6	2744	86 23 25	2760

AT GREENWICH APPARENT NOON.

AT GREENWICH APPARENT NOON.											
Day of the Week.	Day of the Month.	THE SUN'S						Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from		Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.	Added to Apparent Time.				
Wed.	1	^h 16 ^m 31 ^s 45.60	10.814	S. 21 54 15.8	-22.74	16 16.00	70.32	^m 10 ^s 37.26	0.954		
Thur.	2	16 36 5.43	10.838	22 3 9.0	21.68	16 16.15	70.41	10 14.05	0.979		
Frid.	3	16 40 25.85	10.862	22 11 36.7	20.62	16 16.30	70.49	9 50.26	1.003		
Sat.	4	16 44 46.83	10.885	22 19 38.6	-19.54	16 16.44	70.57	9 25.90	1.026		
SUN.	5	16 49 8.36	10.908	22 27 14.5	18.45	16 16.58	70.64	9 0.99	1.048		
Mon.	6	16 53 30.41	10.929	22 34 24.1	17.35	16 16.71	70.71	8 35.57	1.069		
Tues.	7	16 57 52.96	10.949	22 41 7.2	-16.24	16 16.84	70.78	8 9.65	1.090		
Wed.	8	17 2 15.98	10.968	22 47 23.6	15.12	16 16.96	70.84	7 43.26	1.109		
Thur.	9	17 6 39.45	10.987	22 53 13.2	14.00	16 17.08	70.90	7 16.42	1.127		
Frid.	10	17 11 3.35	11.004	22 58 35.6	-12.87	16 17.19	70.96	6 49.16	1.144		
Sat.	11	17 15 27.65	11.020	23 3 30.9	11.73	16 17.29	71.01	6 21.49	1.160		
SUN.	12	17 19 52.32	11.035	23 7 58.7	10.58	16 17.39	71.05	5 53.45	1.175		
Mon.	13	17 24 17.34	11.049	23 11 58.8	-9.42	16 17.48	71.09	5 25.07	1.189		
Tues.	14	17 28 42.69	11.061	23 15 31.3	8.27	16 17.57	71.13	4 56.36	1.201		
Wed.	15	17 33 8.31	11.073	23 18 36.0	7.11	16 17.65	71.16	4 27.37	1.213		
Thur.	16	17 37 34.20	11.083	23 21 12.6	-5.94	16 17.72	71.19	3 58.13	1.223		
Frid.	17	17 42 0.32	11.092	23 23 21.2	4.77	16 17.79	71.22	3 28.65	1.232		
Sat.	18	17 46 26.61	11.099	23 25 1.6	3.60	16 17.86	71.24	2 58.99	1.239		
SUN.	19	17 50 53.07	11.105	23 26 13.8	-2.42	16 17.92	71.25	2 29.18	1.245		
Mon.	20	17 55 19.65	11.109	23 26 57.6	1.24	16 17.98	71.26	1 59.24	1.249		
Tues.	21	17 59 46.30	11.111	23 27 13.2	-0.06	16 18.03	71.27	1 29.22	1.251		
Wed.	22	18 4 13.00	11.112	23 27 0.4	+1.13	16 18.08	71.27	0 59.17	1.252		
Thur.	23	18 8 39.70	11.112	23 26 19.2	2.31	16 18.13	71.27	0 29.11	1.252		
Frid.	24	18 13 6.37	11.110	23 25 9.7	3.49	16 18.17	71.26	0 0.92	1.250		
Sat.	25	18 17 32.96	11.106	23 23 31.9	+4.66	16 18.21	71.25	0 30.87	1.246		
SUN.	26	18 21 59.44	11.100	23 21 25.9	5.84	16 18.25	71.23	1 0.71	1.240		
Mon.	27	18 26 25.77	11.093	23 18 51.7	7.01	16 18.28	71.21	1 30.40	1.233		
Tues.	28	18 30 51.91	11.084	23 15 49.4	+8.18	16 18.31	71.19	1 59.90	1.224		
Wed.	29	18 35 17.83	11.074	23 12 19.1	9.34	16 18.33	71.16	2 29.18	1.214		
Thur.	30	18 39 43.48	11.062	23 8 21.0	10.50	16 18.35	71.12	2 58.19	1.202		
Frid.	31	18 44 8.84	11.050	23 3 55.1	11.66	16 18.36	71.08	3 26.92	1.190		
Sat.	32	18 48 33.88	11.037	S. 22 59 1.6	+12.81	16 18.37	71.04	3 55.32	1.177		

NOTE.—The mean time of semidiameter passing may be found by subtracting 0.19 from the sidereal time.

The sign — prefixed to the hourly change of declination indicates that south declinations are increasing; the sign + indicates that south declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Added to	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Subtracted from Mean Time.		
Wed.	1	h m s 16 31 47.51	s 10.811	S. ° ' " 21 54 19.8	" -22.73.	m s 10 37.09	s 0.953	h m s 16 42 24.60
Thur.	2	16 36 7.28	10.836	22 3 12.7	21.67	10 13.88	0.978	16 46 21.16
Frid.	3	16 40 27.63	10.860	22 11 40.1	20.60	9 50.09	1.003	16 50 17.72
Sat.	4	16 44 48.54	10.883	22 19 41.7	-19.52	9 25.74	1.026	16 54 14.28
SUN.	5	16 49 10.00	10.905	22 27 17.2	18.43	9 0.84	1.048	16 58 10.84
Mon.	6	16 53 31.98	10.926	22 34 26.6	17.33	8 35.42	1.069	17 2 7.40
Tues.	7	16 57 54.45	10.946	22 41 9.4	-16.23	8 9.50	1.090	17 6 3.95
Wed.	8	17 2 17.39	10.965	22 47 25.6	15.12	7 43.12	1.109	17 10 0.51
Thur.	9	17 6 40.78	10.984	22 53 14.9	13.99	7 16.29	1.127	17 13 57.07
Frid.	10	17 11 4.60	11.001	22 58 37.1	-12.86	6 49.03	1.144	17 17 53.63
Sat.	11	17 15 28.82	11.017	23 3 32.1	11.72	6 21.37	1.160	17 21 50.19
SUN.	12	17 19 53.40	11.032	23 7 59.7	10.57	5 53.34	1.175	17 25 46.74
Mon.	13	17 24 18.34	11.046	23 11 59.7	-9.42	5 24.96	1.189	17 29 43.30
Tues.	14	17 28 43.59	11.059	23 15 32.0	8.26	4 56.27	1.201	17 33 39.86
Wed.	15	17 33 9.13	11.070	23 18 36.5	7.10	4 27.29	1.213	17 37 36.42
Thur.	16	17 37 34.93	11.080	23 21 13.0	-5.94	3 58.05	1.223	17 41 32.98
Frid.	17	17 42 0.96	11.088	23 23 21.5	4.77	3 28.58	1.232	17 45 29.54
Sat.	18	17 46 27.16	11.095	23 25 1.8	3.59	2 58.93	1.239	17 49 26.10
SUN.	19	17 50 53.53	11.101	23 26 13.9	-2.41	2 29.13	1.244	17 53 22.65
Mon.	20	17 55 20.01	11.105	23 26 57.7	1.24	1 59.20	1.248	17 57 19.21
Tues.	21	17 59 46.58	11.108	23 27 13.2	-0.06	1 29.19	1.251	18 1 15.77
Wed.	22	18 4 13.18	11.109	23 27 0.4	+1.12	0 59.15	1.252	18 5 12.33
Thur.	23	18 8 39.79	11.108	23 26 19.2	2.30	0 29.10	1.251	18 9 8.89
Frid.	24	18 13 6.37	11.106	23 25 9.7	3.48	0 0.92	1.249	18 13 5.45
Sat.	25	18 17 32.86	11.102	23 23 32.0	+4.66	0 30.86	1.245	18 17 2.01
SUN.	26	18 21 59.25	11.096	23 21 26.0	5.84	1 0.69	1.240	18 20 58.56
Mon.	27	18 26 25.49	11.089	23 18 51.9	7.01	1 30.37	1.233	18 24 55.12
Tues.	28	18 30 51.54	11.080	23 15 49.7	+8.18	1 59.86	1.224	18 28 51.68
Wed.	29	18 35 17.36	11.071	23 12 19.5	9.34	2 29.12	1.214	18 32 48.24
Thur.	30	18 39 42.93	11.060	23 8 21.5	10.50	2 58.13	1.203	18 36 44.80
Frid.	31	18 44 8.20	11.048	23 3 55.8	11.65	3 26.85	1.190	18 40 41.36
Sat.	32	18 48 33.15	11.035	S. 22 59 2.4	+12.79	3 55.24	1.176	18 44 37.92

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
 The sign — prefixed to the hourly change of declination indicates that south declinations are increasing; the sign + indicates that south declinations are decreasing.

Diff. for 1 Hour,
 +9°.8565.
 (Table III.)

AT GREENWICH MEAN NOON.										
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.		
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.					
		λ	λ'							
1	335	249 37 11.6	36 11.4	152.16	+ 0.50	9.9937275	-28.7	h m s	7 16 23.71	
2	336	250 38 3.9	37 3.5	152.20	0.59	9.9936594	27.9		7 12 27.79	
3	337	251 38 57.0	37 56.4	152.23	0.66	9.9935934	27.0		7 8 31.88	
4	338	252 39 50.9	38 50.2	152.26	+ 0.70	9.9935296	-26.1		7 4 35.97	
5	339	253 40 45.5	39 44.6	152.29	0.71	9.9934680	25.1		7 0 40.06	
6	340	254 41 41.0	40 39.9	152.33	0.69	9.9934089	24.1		6 56 44.15	
7	341	255 42 37.2	41 35.9	152.36	+ 0.63	9.9933523	-23.1		6 52 48.23	
8	342	256 43 34.2	42 32.7	152.40	0.56	9.9932982	22.0		6 48 52.32	
9	343	257 44 32.0	43 30.4	152.43	0.46	9.9932468	20.9		6 44 56.41	
10	344	258 45 30.7	44 28.9	152.47	+ 0.34	9.9931981	-19.8		6 41 0.50	
11	345	259 46 30.4	45 28.4	152.51	0.21	9.9931521	18.6		6 37 4.58	
12	346	260 47 30.9	46 28.7	152.54	+ 0.08	9.9931087	17.5		6 33 8.67	
13	347	261 48 32.3	47 29.9	152.58	- 0.05	9.9930678	-16.5		6 29 12.76	
14	348	262 49 34.7	48 32.1	152.62	0.17	9.9930294	15.5		6 25 16.85	
15	349	263 50 38.1	49 35.3	152.66	0.27	9.9929934	14.5		6 21 20.93	
16	350	264 51 42.4	50 39.5	152.70	- 0.36	9.9929598	-13.6		6 17 25.02	
17	351	265 52 47.6	51 44.5	152.74	0.41	9.9929283	12.7		6 13 29.11	
18	352	266 53 53.5	52 50.2	152.77	0.44	9.9928988	11.9		6 9 33.20	
19	353	267 55 0.3	53 56.8	152.80	- 0.44	9.9928713	-11.1		6 5 37.28	
20	354	268 56 7.9	55 4.2	152.83	0.41	9.9928456	10.3		6 1 41.37	
21	355	269 57 16.0	56 12.1	152.85	0.35	9.9928217	9.6		5 57 45.46	
22	356	270 58 24.8	57 20.7	152.87	- 0.26	9.9927995	- 8.9		5 53 49.54	
23	357	271 59 34.0	58 29.7	152.89	0.15	9.9927789	8.2		5 49 53.63	
24	358	272 60 43.6	59 39.1	152.91	- 0.03	9.9927599	7.5		5 45 57.72	
25	359	274 1 53.5	0 48.8	152.92	+ 0.10	9.9927425	- 6.9		5 42 1.81	
26	360	275 3 3.5	1 58.6	152.92	0.23	9.9927269	6.2		5 38 5.89	
27	361	276 4 13.6	3 8.5	152.92	0.36	9.9927130	5.5		5 34 9.98	
28	362	277 5 23.8	4 18.6	152.92	+ 0.48	9.9927009	- 4.7		5 30 14.07	
29	363	278 6 33.7	5 28.3	152.92	0.57	9.9926906	3.8		5 26 18.16	
30	364	279 7 43.6	6 38.0	152.91	0.64	9.9926823	2.9		5 22 22.24	
31	365	280 8 53.2	7 47.4	152.90	0.68	9.9926762	2.0		5 18 26.33	
32	366	281 10 2.5	8 56.5	152.88	+ 0.70	9.9926725	- 1.1		5 14 30.42	
NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ' to the mean equinox of January 0 th .									Diff. for 1 Hour, -9 ^h .8296. (Table II.)	

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month									
	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
1	15 26.3	15 20.0	56 32.8	-2.00	56 9.6	-1.86	h m 6 24.0	m 1.80	d 7.1
2	15 14.1	15 8.8	55 48.2	1.70	55 28.8	1.53	7 6.6	1.76	8.1
3	15 4.1	14 59.9	55 11.4	1.37	54 56.0	1.20	7 48.8	1.77	9.1
4	14 56.2	14 53.1	54 42.5	-1.05	54 30.9	-0.89	8 31.7	1.81	10.1
5	14 50.4	14 48.3	54 21.2	0.73	54 13.3	0.59	9 16.0	1.89	11.1
6	14 46.6	14 45.3	54 7.0	0.46	54 2.3	0.33	10 2.3	1.97	12.1
7	14 44.4	14 43.9	53 59.0	-0.21	53 57.2	-0.10	10 50.7	2.05	13.1
8	14 43.8	14 44.0	53 56.7	+0.01	53 57.5	+0.12	11 40.6	2.10	14.1
9	14 44.6	14 45.5	53 59.6	0.23	54 2.9	0.33	12 31.2	2.11	15.1
10	14 46.7	14 48.3	54 7.4	+0.43	54 13.3	+0.54	13 21.4	2.07	16.1
11	14 50.2	14 52.5	54 20.4	0.65	54 28.9	0.77	14 10.3	2.00	17.1
12	14 55.2	14 58.3	54 38.8	0.89	54 50.2	1.02	14 57.4	1.92	18.1
13	15 1.9	15 5.8	55 3.2	+1.15	55 17.7	+1.28	15 42.8	1.86	19.1
14	15 10.3	15 15.1	55 34.0	1.43	55 51.9	1.56	16 26.9	1.82	20.1
15	15 20.4	15 26.2	56 11.4	1.70	56 32.6	1.83	17 10.7	1.83	21.1
16	15 32.4	15 38.9	56 55.2	+1.95	57 19.3	+2.05	17 55.2	1.89	22.1
17	15 45.8	15 52.8	57 44.4	2.13	58 10.3	2.18	18 41.8	2.00	23.1
18	16 0.0	16 7.2	58 36.7	2.20	59 3.0	2.17	19 31.8	2.17	24.1
19	16 14.2	16 20.8	59 28.7	+2.09	59 53.1	+1.96	20 26.5	2.39	25.1
20	16 27.0	16 32.4	60 15.7	1.78	60 35.7	1.54	21 26.5	2.61	26.1
21	16 37.0	16 40.5	60 52.6	1.24	61 5.5	0.89	22 31.2	2.76	27.1
22	16 42.8	16 43.9	61 14.0	+0.51	61 17.8	+0.11	23 37.9	2.78	28.1
23	16 43.6	16 41.9	61 16.7	-0.30	61 10.6	-0.71	δ		29.1
24	16 38.9	16 34.7	60 59.6	1.10	60 44.1	1.46	0 43.4	2.65	0.7
25	16 29.4	16 23.1	60 24.6	-1.77	60 1.7	-2.02	1 44.6	2.44	1.7
26	16 16.2	16 8.7	59 36.1	2.22	59 8.5	2.35	2 40.4	2.22	2.7
27	16 0.9	15 52.8	58 39.8	2.42	58 10.4	2.44	3 31.2	2.03	3.7
28	15 44.9	15 37.1	57 41.2	-2.40	57 12.7	-2.33	4 18.2	1.89	4.7
29	15 29.7	15 22.6	56 45.3	2.22	56 19.4	2.08	5 2.6	1.82	5.7
30	15 16.1	15 10.1	55 55.4	1.91	55 33.5	1.73	5 45.8	1.79	6.7
31	15 4.8	15 0.1	55 13.9	1.54	54 56.5	1.35	6 29.0	1.81	7.7
32	14 56.0	14 52.6	54 41.6	-1.14	54 29.1	-0.94	7 13.1	1.87	8.7

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 1.					FRIDAY 3.				
0	22 55 12.86	1.9277	S. 2 54 6.2	14.147	0	0 25 42.98	1.8727	N. 8 4 31.4	12.998
1	22 57 8.43	1.9247	2 39 57.5	14.142	1	0 27 35.36	1.8733	8 17 30.0	12.995
2	22 59 3.82	1.9218	2 25 49.2	14.136	2	0 29 27.77	1.8739	8 30 26.1	12.918
3	23 0 59.04	1.9189	2 11 41.2	14.129	3	0 31 20.23	1.8747	8 43 19.5	12.868
4	23 2 54.09	1.9161	1 57 33.7	14.122	4	0 33 12.74	1.8756	8 56 10.3	12.825
5	23 4 48.97	1.9134	1 43 26.6	14.115	5	0 35 5.30	1.8765	9 8 58.5	12.780
6	23 6 43.70	1.9108	1 29 20.1	14.104	6	0 36 57.92	1.8774	9 21 43.9	12.734
7	23 8 38.27	1.9083	1 15 14.1	14.094	7	0 38 50.59	1.8784	9 34 26.6	12.688
8	23 10 32.70	1.9059	1 1 8.8	14.083	8	0 40 43.33	1.8795	9 47 6.4	12.640
9	23 12 26.98	1.9036	0 47 4.1	14.072	9	0 42 36.13	1.8806	9 59 43.4	12.592
10	23 14 21.13	1.9013	0 33 0.2	14.058	10	0 44 29.00	1.8818	10 12 17.5	12.544
11	23 16 15.14	1.8991	0 18 57.1	14.045	11	0 46 21.95	1.8831	10 24 48.7	12.496
12	23 18 9.02	1.8970	S. 0 4 54.8	14.031	12	0 48 14.97	1.8843	10 37 17.0	12.446
13	23 20 2.78	1.8950	N. 0 9 6.6	14.016	13	0 50 8.07	1.8857	10 49 42.2	12.394
14	23 21 56.42	1.8931	0 23 7.1	14.000	14	0 52 1.26	1.8872	11 2 4.3	12.343
15	23 23 49.95	1.8913	0 37 6.6	13.983	15	0 53 54.54	1.8887	11 14 23.3	12.291
16	23 25 43.37	1.8895	0 51 5.0	13.965	16	0 55 47.90	1.8902	11 26 39.2	12.238
17	23 27 36.69	1.8878	1 5 2.4	13.947	17	0 57 41.36	1.8918	11 38 51.9	12.184
18	23 29 29.91	1.8862	1 18 58.7	13.928	18	0 59 34.92	1.8935	11 51 1.3	12.130
19	23 31 23.03	1.8846	1 32 53.8	13.908	19	1 1 28.58	1.8953	12 3 7.5	12.075
20	23 33 16.06	1.8832	1 46 47.6	13.887	20	1 3 22.35	1.8970	12 15 10.3	12.019
21	23 35 9.01	1.8818	2 0 40.2	13.865	21	1 5 16.22	1.8988	12 27 9.8	11.963
22	23 37 1.88	1.8805	2 14 31.4	13.842	22	1 7 10.20	1.9006	12 39 5.9	11.906
23	23 38 54.67	1.8793	N. 2 28 21.3	13.819	23	1 9 4.29	1.9025	N. 12 50 58.5	11.848
THURSDAY 2.					SATURDAY 4.				
0	23 40 47.39	1.8782	N. 2 42 9.7	13.795	0	1 10 58.50	1.9045	N. 13 2 47.7	11.790
1	23 42 40.05	1.8771	2 55 56.7	13.771	1	1 12 52.83	1.9065	13 14 33.3	11.730
2	23 44 32.64	1.8760	3 9 42.2	13.745	2	1 14 47.28	1.9086	13 26 15.3	11.670
3	23 46 25.17	1.8751	3 23 26.1	13.719	3	1 16 41.86	1.9107	13 37 53.7	11.610
4	23 48 17.65	1.8743	3 37 8.4	13.692	4	1 18 36.57	1.9129	13 49 28.5	11.549
5	23 50 10.09	1.8736	3 50 49.1	13.664	5	1 20 31.41	1.9152	14 0 59.6	11.487
6	23 52 2.48	1.8728	4 4 28.1	13.636	6	1 22 26.39	1.9174	14 12 26.9	11.423
7	23 53 54.83	1.8722	4 18 5.4	13.607	7	1 24 21.50	1.9197	14 23 50.4	11.360
8	23 55 47.15	1.8717	4 31 40.9	13.577	8	1 26 16.75	1.9220	14 35 10.1	11.297
9	23 57 39.43	1.8712	4 45 14.6	13.546	9	1 28 12.14	1.9244	14 46 26.0	11.232
10	23 59 31.69	1.8708	4 58 46.4	13.514	10	1 30 7.68	1.9268	14 57 37.9	11.166
11	0 1 23.93	1.8705	5 12 16.3	13.482	11	1 32 3.36	1.9293	15 8 45.9	11.099
12	0 3 16.15	1.8703	5 25 44.2	13.448	12	1 33 59.19	1.9318	15 19 49.8	11.032
13	0 5 8.36	1.8701	5 39 10.1	13.415	13	1 35 55.17	1.9343	15 30 49.7	10.964
14	0 7 0.56	1.8699	5 52 34.0	13.381	14	1 37 51.31	1.9370	15 41 45.5	10.896
15	0 8 52.75	1.8699	6 5 55.8	13.346	15	1 39 47.61	1.9397	15 52 37.2	10.827
16	0 10 44.95	1.8700	6 19 15.5	13.311	16	1 41 44.07	1.9423	16 3 24.7	10.757
17	0 12 37.15	1.8700	6 32 33.1	13.274	17	1 43 40.69	1.9450	16 14 8.0	10.687
18	0 14 29.35	1.8702	6 45 48.4	13.236	18	1 45 37.47	1.9478	16 24 47.1	10.615
19	0 16 21.57	1.8704	6 59 1.4	13.198	19	1 47 34.42	1.9506	16 35 21.8	10.542
20	0 18 13.80	1.8708	7 12 12.2	13.160	20	1 49 31.54	1.9533	16 45 52.1	10.469
21	0 20 6.06	1.8712	7 25 20.6	13.121	21	1 51 28.82	1.9562	16 56 18.1	10.396
22	0 21 58.34	1.8715	7 38 26.7	13.081	22	1 53 26.28	1.9591	17 6 39.6	10.321
23	0 23 50.64	1.8720	7 51 30.3	13.039	23	1 55 23.91	1.9619	17 16 56.6	10.246
24	0 25 42.98	1.8727	N. 8 4 31.4	12.998	24	1 57 21.71	1.9649	N. 17 27 9.1	10.170

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 5.					TUESDAY 7.				
0	1 57 21.71	1.9649	N.17 27 9.1	10.170	0	3 35 21.80	2.1185	N.23 54 11.7	5.687
1	1 59 19.70	1.9679	17 37 17.0	10.093	1	3 37 29.00	2.1215	23 59 49.7	5.578
2	2 1 17.86	1.9708	17 47 20.3	10.017	2	3 39 36.38	2.1244	24 5 21.0	5.467
3	2 3 16.20	1.9739	17 57 19.0	9.938	3	3 41 43.93	2.1273	24 10 45.7	5.356
4	2 5 14.73	1.9770	18 7 12.9	9.859	4	3 43 51.66	2.1302	24 16 3.7	5.244
5	2 7 13.44	1.9801	18 17 2.1	9.780	5	3 45 59.55	2.1339	24 21 15.0	5.132
6	2 9 12.34	1.9832	18 26 46.5	9.700	6	3 48 7.61	2.1357	24 26 19.5	5.019
7	2 11 11.42	1.9863	18 36 26.1	9.619	7	3 50 15.83	2.1384	24 31 17.3	4.907
8	2 13 10.69	1.9895	18 46 0.8	9.537	8	3 52 24.22	2.1412	24 36 8.3	4.793
9	2 15 10.16	1.9927	18 55 30.5	9.454	9	3 54 32.77	2.1438	24 40 52.4	4.677
10	2 17 9.81	1.9958	19 4 55.3	9.372	10	3 56 41.47	2.1463	24 45 29.6	4.563
11	2 19 9.65	1.9989	19 14 15.1	9.288	11	3 58 50.33	2.1488	24 50 0.0	4.448
12	2 21 9.68	2.0022	19 23 29.8	9.203	12	4 0 59.33	2.1513	24 54 23.4	4.333
13	2 23 9.91	2.0054	19 32 39.4	9.118	13	4 3 8.49	2.1538	24 58 39.9	4.216
14	2 25 10.33	2.0087	19 41 43.9	9.034	14	4 5 17.79	2.1562	25 2 49.3	4.098
15	2 27 10.95	2.0119	19 50 43.2	8.945	15	4 7 27.23	2.1586	25 6 51.7	3.982
16	2 29 11.76	2.0152	19 59 37.3	8.857	16	4 9 36.82	2.1609	25 10 47.1	3.864
17	2 31 12.77	2.0185	20 8 26.1	8.769	17	4 11 46.54	2.1632	25 14 35.4	3.746
18	2 33 13.98	2.0218	20 17 9.6	8.681	18	4 13 56.40	2.1654	25 18 16.6	3.627
19	2 35 15.38	2.0251	20 25 47.8	8.591	19	4 16 6.39	2.1676	25 21 50.6	3.508
20	2 37 16.99	2.0284	20 34 20.5	8.499	20	4 18 16.51	2.1697	25 25 17.5	3.388
21	2 39 18.79	2.0317	20 42 47.7	8.408	21	4 20 26.75	2.1717	25 28 37.2	3.268
22	2 41 20.79	2.0350	20 51 9.5	8.317	22	4 22 37.11	2.1737	25 31 49.7	3.148
23	2 43 22.99	2.0383	N.20 59 25.8	8.224	23	4 24 47.59	2.1756	N.25 34 55.0	3.028
MONDAY 6.					WEDNESDAY 8.				
0	2 45 25.38	2.0416	N.21 7 36.4	8.131	0	4 26 58.18	2.1774	N.25 37 53.0	2.907
1	2 47 27.98	2.0450	21 15 41.5	8.038	1	4 29 8.88	2.1793	25 40 43.8	2.785
2	2 49 30.78	2.0483	21 23 40.9	7.943	2	4 31 19.69	2.1811	25 43 27.2	2.663
3	2 51 33.78	2.0516	21 31 34.6	7.847	3	4 33 30.61	2.1827	25 46 3.3	2.541
4	2 53 36.97	2.0549	21 39 22.5	7.751	4	4 35 41.62	2.1843	25 48 32.1	2.418
5	2 55 40.37	2.0582	21 47 4.7	7.654	5	4 37 52.73	2.1859	25 50 53.5	2.296
6	2 57 43.96	2.0615	21 54 41.0	7.557	6	4 40 3.93	2.1874	25 53 7.6	2.173
7	2 59 47.75	2.0648	22 2 11.5	7.458	7	4 42 15.22	2.1888	25 55 14.3	2.050
8	3 1 51.74	2.0682	22 9 36.0	7.359	8	4 44 26.59	2.1902	25 57 13.6	1.926
9	3 3 55.93	2.0714	22 16 54.6	7.260	9	4 46 38.04	2.1915	25 59 5.4	1.802
10	3 6 0.31	2.0747	22 24 7.2	7.159	10	4 48 49.57	2.1928	26 0 49.8	1.678
11	3 8 4.89	2.0780	22 31 13.7	7.058	11	4 51 1.18	2.1940	26 2 26.8	1.553
12	3 10 9.67	2.0812	22 38 14.2	6.957	12	4 53 12.85	2.1951	26 3 56.2	1.428
13	3 12 14.64	2.0844	22 45 8.6	6.855	13	4 55 24.59	2.1961	26 5 18.2	1.304
14	3 14 19.80	2.0877	22 51 56.8	6.752	14	4 57 36.38	2.1970	26 6 32.7	1.179
15	3 16 25.16	2.0909	22 58 38.8	6.648	15	4 59 48.23	2.1980	26 7 39.7	1.054
16	3 18 30.71	2.0940	23 5 14.6	6.544	16	5 2 0.14	2.1988	26 8 39.2	0.929
17	3 20 36.44	2.0972	23 11 44.1	6.439	17	5 4 12.09	2.1996	26 9 31.2	0.803
18	3 22 42.37	2.1003	23 18 7.3	6.333	18	5 6 24.09	2.2002	26 10 15.6	0.678
19	3 24 48.48	2.1034	23 24 24.1	6.227	19	5 8 36.12	2.2008	26 10 52.5	0.552
20	3 26 54.78	2.1065	23 30 34.6	6.121	20	5 10 48.19	2.2015	26 11 21.8	0.426
21	3 29 1.26	2.1096	23 36 38.6	6.013	21	5 13 0.30	2.2020	26 11 43.6	0.300
22	3 31 7.93	2.1127	23 42 36.2	5.905	22	5 15 12.43	2.2023	26 11 57.8	0.174
23	3 33 14.78	2.1156	23 48 27.2	5.796	23	5 17 24.58	2.2026	26 12 4.5	+ 0.048
24	3 35 21.80	2.1185	N.23 54 11.7	5.687	24	5 19 36.74	2.2028	N.26 12 3.6	- 0.078

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 9.					SATURDAY 11.				
0	5 19 36.74	2.2028	N.26 12 3.6	0.078	0	7 4 23.14	2.1399	N.23 45 20.9	5.985
1	5 21 48.92	2.2031	26 11 55.1	0.204	1	7 6 31.46	2.1373	23 39 22.0	6.038
2	5 24 1.11	2.2032	26 11 39.1	0.330	2	7 8 39.62	2.1348	23 33 16.4	6.130
3	5 26 13.31	2.2033	26 11 15.5	0.457	3	7 10 47.63	2.1322	23 27 4.0	6.262
4	5 28 25.51	2.2033	26 10 44.3	0.583	4	7 12 55.48	2.1295	23 20 45.0	6.372
5	5 30 37.71	2.2032	26 10 5.5	0.709	5	7 15 3.17	2.1269	23 14 19.4	6.482
6	5 32 49.90	2.2031	26 9 19.2	0.835	6	7 17 10.70	2.1241	23 7 47.2	6.592
7	5 35 2.08	2.2028	26 8 25.3	0.962	7	7 19 18.06	2.1213	23 1 8.4	6.702
8	5 37 14.24	2.2025	26 7 23.8	1.088	8	7 21 25.26	2.1186	22 54 23.1	6.809
9	5 39 26.38	2.2022	26 6 14.8	1.213	9	7 23 32.29	2.1158	22 47 31.3	6.917
10	5 41 38.50	2.2018	26 4 58.2	1.339	10	7 25 39.16	2.1131	22 40 33.1	7.024
11	5 43 50.59	2.2012	26 3 34.1	1.465	11	7 27 45.86	2.1103	22 33 28.4	7.131
12	5 46 2.64	2.2005	26 2 2.4	1.591	12	7 29 52.39	2.1074	22 26 17.4	7.237
13	5 48 14.66	2.2000	26 0 23.2	1.716	13	7 31 58.75	2.1045	22 19 0.0	7.342
14	5 50 26.64	2.1993	25 58 36.5	1.842	14	7 34 4.93	2.1017	22 11 36.4	7.446
15	5 52 38.57	2.1985	25 56 42.2	1.967	15	7 36 10.95	2.0988	22 4 6.5	7.552
16	5 54 50.46	2.1977	25 54 40.5	2.092	16	7 38 16.79	2.0958	21 56 30.3	7.654
17	5 57 2.29	2.1968	25 52 31.2	2.217	17	7 40 22.45	2.0929	21 48 48.0	7.757
18	5 59 14.07	2.1958	25 50 14.5	2.341	18	7 42 27.94	2.0900	21 40 59.5	7.859
19	6 1 25.78	2.1947	25 47 50.3	2.466	19	7 44 33.25	2.0871	21 33 4.9	7.960
20	6 3 37.43	2.1937	25 45 18.6	2.590	20	7 46 38.39	2.0842	21 25 4.3	8.061
21	6 5 49.02	2.1925	25 42 39.5	2.714	21	7 48 43.35	2.0813	21 16 57.6	8.161
22	6 8 0.53	2.1912	25 39 52.9	2.838	22	7 50 48.14	2.0783	21 8 45.0	8.260
23	6 10 11.96	2.1899	N.25 36 59.0	2.961	23	7 52 52.75	2.0753	N.21 0 26.4	8.359
FRIDAY 10.					SUNDAY 12.				
0	6 12 23.32	2.1886	N.25 33 57.6	3.085	0	7 54 57.17	2.0723	N.20 52 1.9	8.457
1	6 14 34.59	2.1872	25 30 48.8	3.207	1	7 57 1.42	2.0694	20 43 31.6	8.553
2	6 16 45.78	2.1857	25 27 32.7	3.329	2	7 59 5.50	2.0665	20 34 55.5	8.650
3	6 18 56.87	2.1841	25 24 9.3	3.452	3	8 1 9.40	2.0635	20 26 13.6	8.747
4	6 21 7.87	2.1825	25 20 38.5	3.574	4	8 3 13.12	2.0606	20 17 25.9	8.842
5	6 23 18.77	2.1808	25 17 0.4	3.696	5	8 5 16.67	2.0577	20 8 32.6	8.936
6	6 25 29.56	2.1791	25 13 15.0	3.817	6	8 7 20.04	2.0548	19 59 33.6	9.030
7	6 27 40.26	2.1773	25 9 22.4	3.937	7	8 9 23.24	2.0518	19 50 29.0	9.123
8	6 29 50.84	2.1755	25 5 22.6	4.058	8	8 11 26.26	2.0489	19 41 18.9	9.215
9	6 32 1.32	2.1737	25 1 15.5	4.178	9	8 13 29.11	2.0460	19 32 3.2	9.307
10	6 34 11.68	2.1717	24 57 1.2	4.298	10	8 15 31.78	2.0431	19 22 42.0	9.398
11	6 36 21.92	2.1697	24 52 39.8	4.417	11	8 17 34.28	2.0402	19 13 15.4	9.488
12	6 38 32.04	2.1677	24 48 11.2	4.536	12	8 19 36.61	2.0374	19 3 43.4	9.578
13	6 40 42.04	2.1656	24 43 35.5	4.654	13	8 21 38.77	2.0345	18 54 6.1	9.666
14	6 42 51.91	2.1635	24 38 52.7	4.772	14	8 23 40.75	2.0316	18 44 23.5	9.754
15	6 45 1.66	2.1613	24 34 2.8	4.890	15	8 25 42.56	2.0288	18 34 35.6	9.842
16	6 47 11.27	2.1591	24 29 5.9	5.007	16	8 27 44.21	2.0261	18 24 42.5	9.928
17	6 49 20.75	2.1568	24 24 2.0	5.123	17	8 29 45.69	2.0233	18 14 44.2	10.014
18	6 51 30.09	2.1546	24 18 51.1	5.239	18	8 31 47.01	2.0206	18 4 40.8	10.099
19	6 53 39.30	2.1522	24 13 33.3	5.355	19	8 33 48.16	2.0178	17 54 32.3	10.183
20	6 55 48.36	2.1498	24 8 8.5	5.470	20	8 35 49.15	2.0151	17 44 18.8	10.267
21	6 57 57.28	2.1474	24 2 36.9	5.585	21	8 37 49.97	2.0124	17 34 0.3	10.350
22	7 0 6.05	2.1449	23 56 58.3	5.699	22	8 39 50.64	2.0098	17 23 36.8	10.432
23	7 2 14.67	2.1424	23 51 13.0	5.812	23	8 41 51.14	2.0071	17 13 8.5	10.513
24	7 4 23.14	2.1399	N.23 45 20.9	5.925	24	8 43 51.49	2.0046	N.17 2 35.2	10.594

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 13.					WEDNESDAY 15.				
0	8 43 51.49	2.0046	N. 17 2 35.2	20.594	0	10 17 52.08	1.9325	N. 7 15 26.9	23.577
1	8 45 51.69	2.0020	16 51 57.2	20.673	1	10 19 48.03	1.9324	7 1 51.0	23.680
2	8 47 51.73	1.9994	16 41 14.4	20.753	2	10 21 43.97	1.9323	6 48 12.5	23.663
3	8 49 51.62	1.9970	16 30 26.8	20.832	3	10 23 39.91	1.9324	6 34 31.5	23.704
4	8 51 51.37	1.9945	16 19 34.6	20.909	4	10 25 35.86	1.9326	6 20 48.0	23.745
5	8 53 50.96	1.9920	16 8 37.7	20.987	5	10 27 31.82	1.9328	6 7 2.1	23.785
6	8 55 50.41	1.9897	15 57 36.2	21.065	6	10 29 27.79	1.9330	5 53 13.8	23.825
7	8 57 49.72	1.9873	15 46 30.2	21.138	7	10 31 23.78	1.9334	5 39 23.1	23.863
8	8 59 48.89	1.9850	15 35 19.7	21.212	8	10 33 19.80	1.9338	5 25 30.2	23.900
9	9 1 47.92	1.9827	15 24 4.8	21.286	9	10 35 15.84	1.9343	5 11 35.1	23.937
10	9 3 46.81	1.9804	15 12 45.4	21.360	10	10 37 11.92	1.9349	4 57 37.8	23.973
11	9 5 45.57	1.9782	15 1 21.6	21.433	11	10 39 8.03	1.9355	4 43 38.4	24.008
12	9 7 44.19	1.9760	14 49 53.5	21.504	12	10 41 4.18	1.9363	4 29 36.8	24.042
13	9 9 42.69	1.9739	14 38 21.1	21.575	13	10 43 0.38	1.9371	4 15 33.3	24.075
14	9 11 41.06	1.9718	14 26 44.5	21.645	14	10 44 56.63	1.9380	4 1 27.8	24.108
15	9 13 39.31	1.9698	14 15 3.7	21.714	15	10 46 52.94	1.9389	3 47 20.3	24.140
16	9 15 37.43	1.9678	14 3 18.8	21.783	16	10 48 49.30	1.9399	3 33 11.0	24.171
17	9 17 35.44	1.9659	13 51 29.8	21.851	17	10 50 45.73	1.9411	3 18 59.8	24.201
18	9 19 33.34	1.9640	13 39 36.7	21.918	18	10 52 42.23	1.9423	3 4 46.9	24.229
19	9 21 31.12	1.9621	13 27 39.6	21.984	19	10 54 38.80	1.9435	2 50 32.3	24.258
20	9 23 28.79	1.9603	13 15 38.6	22.050	20	10 56 35.45	1.9448	2 36 16.0	24.285
21	9 25 26.35	1.9585	13 3 33.6	22.116	21	10 58 32.18	1.9462	2 21 58.1	24.312
22	9 27 23.81	1.9567	12 51 24.7	22.179	22	11 0 29.00	1.9478	2 7 38.6	24.337
23	9 29 21.16	1.9551	N. 12 39 12.1	22.242	23	11 2 25.92	1.9494	N. 1 53 17.7	24.361
TUESDAY 14.					THURSDAY 16.				
0	9 31 18.42	1.9536	N. 12 26 55.7	22.305	0	11 4 22.93	1.9511	N. 1 38 55.3	24.385
1	9 33 15.59	1.9520	12 14 35.5	22.367	1	11 6 20.05	1.9528	1 24 31.5	24.408
2	9 35 12.66	1.9505	12 2 11.7	22.428	2	11 8 17.27	1.9546	1 10 6.4	24.430
3	9 37 9.65	1.9491	11 49 44.2	22.489	3	11 10 14.60	1.9565	0 55 39.9	24.451
4	9 39 6.55	1.9477	11 37 13.0	22.548	4	11 12 12.05	1.9585	0 41 12.3	24.470
5	9 41 3.37	1.9463	11 24 38.4	22.607	5	11 14 9.62	1.9606	Q 26 43.5	24.490
6	9 43 0.11	1.9450	11 12 0.2	22.665	6	11 16 7.32	1.9628	N. 0 12 13.5	24.508
7	9 44 56.77	1.9438	10 59 18.6	22.722	7	11 18 5.15	1.9650	S. 0 2 17.5	24.525
8	9 46 53.37	1.9427	10 46 33.6	22.778	8	11 20 3.12	1.9673	0 16 49.5	24.541
9	9 48 49.89	1.9415	10 33 45.2	22.834	9	11 22 1.23	1.9698	0 31 22.4	24.557
10	9 50 46.35	1.9405	10 20 53.5	22.889	10	11 23 59.50	1.9723	0 45 56.3	24.571
11	9 52 42.75	1.9395	10 7 58.5	22.943	11	11 25 57.91	1.9748	1 0 30.9	24.583
12	9 54 39.09	1.9386	9 55 0.3	22.997	12	11 27 56.47	1.9774	1 15 6.3	24.596
13	9 56 35.38	1.9378	9 41 58.9	23.049	13	11 29 55.20	1.9802	1 29 42.4	24.608
14	9 58 31.62	1.9369	9 28 54.4	23.101	14	11 31 54.10	1.9831	1 44 19.2	24.618
15	10 0 27.81	1.9362	9 15 46.8	23.152	15	11 33 53.17	1.9860	1 58 56.5	24.627
16	10 2 23.96	1.9355	9 2 36.1	23.202	16	11 35 52.42	1.9890	2 13 34.4	24.635
17	10 4 20.07	1.9348	8 49 22.5	23.252	17	11 37 51.85	1.9921	2 28 12.7	24.642
18	10 6 16.14	1.9343	8 36 5.9	23.301	18	11 39 51.47	1.9953	2 42 51.4	24.648
19	10 8 12.19	1.9339	8 22 46.4	23.349	19	11 41 51.29	1.9986	2 57 30.5	24.653
20	10 10 8.21	1.9334	8 9 24.0	23.397	20	11 43 51.30	2.0019	3 12 9.8	24.657
21	10 12 4.20	1.9330	7 55 58.8	23.443	21	11 45 51.52	2.0054	3 26 49.3	24.659
22	10 14 0.17	1.9328	7 42 30.9	23.488	22	11 47 51.95	2.0090	3 41 28.9	24.662
23	10 15 56.13	1.9326	7 29 0.2	23.533	23	11 49 52.60	2.0126	3 56 8.7	24.662
24	10 17 52.08	1.9325	N. 7 15 26.9	23.577	24	11 51 53.46	2.0163	S. 4 10 48.4	24.661

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 17.					SUNDAY 19.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
1	11 51 53.46	a.0163	S. 4 10 48.4	14.661	1	13 34 37.32	a.2962	S. 15 29 9.4	13.032
2	11 53 54.55	a.0201	4 25 28.0	14.659	2	13 36 55.32	a.3038	15 42 9.1	12.958
3	11 55 55.87	a.0240	4 40 7.5	14.657	3	13 39 13.78	a.3116	15 55 4.4	12.883
4	11 57 57.43	a.0280	4 54 46.8	14.653	4	13 41 32.71	a.3194	16 7 55.1	12.806
5	11 59 59.23	a.0320	5 9 25.8	14.648	5	13 43 52.11	a.3273	16 20 41.1	12.726
6	12 2 1.27	a.0362	5 24 4.5	14.641	6	13 46 11.99	a.3353	16 33 22.2	12.644
7	12 4 3.57	a.0405	5 38 42.7	14.633	7	13 48 32.35	a.3433	16 45 58.4	12.562
8	12 6 6.13	a.0448	5 53 20.4	14.624	8	13 50 53.18	a.3513	16 58 29.6	12.477
9	12 8 8.95	a.0493	6 7 57.6	14.615	9	13 53 14.50	a.3593	17 10 55.6	12.389
10	12 10 12.04	a.0538	6 22 34.2	14.603	10	13 55 36.30	a.3674	17 23 16.3	12.300
11	12 12 15.40	a.0583	6 37 10.0	14.590	11	13 57 58.59	a.3756	17 35 31.6	12.208
12	12 14 19.04	a.0630	6 51 45.0	14.577	12	14 0 21.37	a.3838	17 47 41.3	12.115
13	12 16 22.96	a.0678	7 6 19.2	14.562	13	14 2 44.64	a.3920	17 59 45.4	12.021
14	12 18 27.17	a.0727	7 20 52.4	14.545	14	14 5 8.41	a.4003	18 11 43.8	11.924
15	12 20 31.68	a.0777	7 35 24.6	14.527	15	14 7 32.67	a.4085	18 23 36.3	11.825
16	12 22 36.49	a.0827	7 49 55.7	14.508	16	14 9 57.43	a.4168	18 35 22.8	11.723
17	12 24 41.61	a.0878	8 4 25.6	14.488	17	14 12 22.69	a.4252	18 47 3.1	11.620
18	12 26 47.03	a.0931	8 18 54.3	14.467	18	14 14 48.45	a.4335	18 58 37.2	11.515
19	12 28 52.78	a.0984	8 33 21.6	14.443	19	14 17 14.71	a.4418	19 10 4.9	11.406
20	12 30 58.84	a.1038	8 47 47.4	14.418	20	14 19 41.47	a.4502	19 21 26.1	11.296
21	12 33 5.23	a.1093	9 2 11.8	14.393	21	14 22 8.74	a.4587	19 32 40.6	11.186
22	12 35 11.96	a.1149	9 16 34.6	14.366	22	14 24 36.51	a.4670	19 43 48.4	11.073
23	12 37 19.02	a.1205	9 30 55.7	14.337	23	14 27 4.78	a.4754	19 54 49.4	10.958
24	12 39 26.42	a.1263	S. 9 45 15.0	14.306	24	14 29 33.56	a.4838	S. 20 5 43.3	10.839
SATURDAY 18.					MONDAY 20.				
0	12 41 34.18	a.1322	S. 9 59 32.4	14.274	0	14 32 2.84	a.4923	S. 20 16 30.1	10.720
1	12 43 42.29	a.1381	10 13 47.9	14.242	1	14 34 32.63	a.5007	20 27 9.7	10.598
2	12 45 50.75	a.1440	10 28 1.4	14.207	2	14 37 2.92	a.5090	20 37 41.9	10.474
3	12 47 59.57	a.1502	10 42 12.7	14.170	3	14 39 33.71	a.5174	20 48 6.6	10.348
4	12 50 8.77	a.1564	10 56 21.8	14.133	4	14 42 5.01	a.5257	20 58 23.7	10.220
5	12 52 18.34	a.1626	11 10 28.6	14.094	5	14 44 36.80	a.5340	21 8 33.0	10.089
6	12 54 28.28	a.1689	11 24 33.1	14.053	6	14 47 9.09	a.5423	21 18 34.4	9.957
7	12 56 38.61	a.1754	11 38 35.0	14.010	7	14 49 41.88	a.5507	21 28 27.8	9.822
8	12 58 49.33	a.1819	11 52 34.3	13.966	8	14 52 15.17	a.5589	21 38 13.0	9.685
9	13 1 0.44	a.1884	12 6 30.9	13.921	9	14 54 48.95	a.5671	21 47 50.0	9.547
10	13 3 11.94	a.1951	12 20 24.8	13.873	10	14 57 23.22	a.5752	21 57 18.7	9.407
11	13 5 23.85	a.2019	12 34 15.7	13.824	11	14 59 57.97	a.5833	22 6 38.8	9.263
12	13 7 36.17	a.2087	12 48 3.7	13.774	12	15 2 33.21	a.5914	22 15 50.2	9.118
13	13 9 48.90	a.2156	13 1 48.6	13.722	13	15 5 8.94	a.5994	22 24 53.0	8.972
14	13 12 2.04	a.2226	13 15 30.3	13.668	14	15 7 45.14	a.6073	22 33 46.8	8.823
15	13 14 15.61	a.2297	13 29 8.8	13.613	15	15 10 21.81	a.6152	22 42 31.7	8.672
16	13 16 29.60	a.2368	13 42 43.8	13.555	16	15 12 58.96	a.6230	22 51 7.5	8.519
17	13 18 44.02	a.2439	13 56 15.4	13.496	17	15 14 36.57	a.6307	22 59 34.0	8.364
18	13 20 58.87	a.2512	14 9 43.3	13.434	18	15 18 14.64	a.6383	23 7 51.2	8.207
19	13 23 14.16	a.2585	14 23 7.5	13.372	19	15 20 53.17	a.6459	23 15 58.9	8.048
20	13 25 29.89	a.2659	14 36 28.0	13.308	20	15 23 32.15	a.6533	23 23 57.0	7.887
21	13 27 46.07	a.2734	14 49 44.5	13.242	21	15 26 11.57	a.6607	23 31 45.4	7.725
22	13 30 2.70	a.2809	15 2 57.0	13.173	22	15 28 51.43	a.6680	23 39 24.0	7.560
23	13 32 19.78	a.2885	15 16 5.3	13.103	23	15 31 31.73	a.6752	23 46 52.6	7.393
24	13 34 37.32	a.2962	S. 15 29 9.4	13.032	24	15 34 12.45	a.6823	S. 23 54 11.2	7.226

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 21.					THURSDAY 23.				
0	15 34 12.45	2.6823	S. 23 54 11.2	7.226	0	17 48 3.75	2.8189	S. 26 1 8.0	2.233
1	15 36 53.60	2.6892	24 1 19.7	7.056	1	17 50 52.82	2.8166	25 58 47.8	2.438
2	15 39 35.16	2.6960	24 8 17.9	6.883	2	17 53 41.74	2.8140	25 56 15.4	2.642
3	15 42 17.12	2.7027	24 15 5.7	6.710	3	17 56 30.50	2.8113	25 53 30.8	2.845
4	15 44 59.49	2.7093	24 21 43.1	6.535	4	17 59 19.09	2.8083	25 50 34.0	3.048
5	15 47 42.24	2.7158	24 28 9.9	6.357	5	18 2 7.50	2.8052	25 47 25.1	3.249
6	15 50 25.38	2.7222	24 34 26.0	6.178	6	18 4 55.71	2.8018	25 44 4.1	3.450
7	15 53 8.90	2.7283	24 40 31.3	5.998	7	18 7 43.71	2.7982	25 40 31.1	3.649
8	15 55 52.78	2.7343	24 46 25.8	5.817	8	18 10 31.49	2.7944	25 36 46.2	3.848
9	15 58 37.02	2.7402	24 52 9.3	5.633	9	18 13 19.04	2.7904	25 32 49.3	4.046
10	16 1 21.60	2.7459	24 57 41.8	5.448	10	18 16 6.34	2.7863	25 28 40.7	4.244
11	16 4 6.53	2.7516	25 3 3.1	5.262	11	18 18 53.39	2.7819	25 24 20.3	4.438
12	16 6 51.79	2.7570	25 8 13.2	5.073	12	18 21 40.17	2.7773	25 19 48.2	4.632
13	16 9 37.37	2.7623	25 13 11.9	4.884	13	18 24 26.67	2.7725	25 15 4.5	4.824
14	16 12 23.27	2.7674	25 17 59.3	4.693	14	18 27 12.87	2.7676	25 10 9.3	5.016
15	16 15 9.46	2.7723	25 22 35.1	4.501	15	18 29 58.78	2.7626	25 5 2.6	5.207
16	16 17 55.94	2.7770	25 26 59.4	4.308	16	18 32 44.38	2.7573	24 59 44.5	5.396
17	16 20 42.70	2.7816	25 31 12.0	4.113	17	18 35 29.65	2.7518	24 54 15.1	5.583
18	16 23 29.73	2.7859	25 35 12.9	3.918	18	18 38 14.60	2.7462	24 48 34.6	5.768
19	16 26 17.01	2.7901	25 39 2.1	3.721	19	18 40 59.20	2.7404	24 42 42.9	5.953
20	16 29 4.54	2.7941	25 42 39.4	3.523	20	18 43 43.45	2.7346	24 36 40.2	6.136
21	16 31 52.30	2.7978	25 46 4.8	3.323	21	18 46 27.35	2.7286	24 30 26.6	6.318
22	16 34 40.28	2.8013	25 49 18.2	3.123	22	18 49 10.88	2.7223	24 24 2.1	6.498
23	16 37 28.48	2.8049	S. 25 52 19.6	2.923	23	18 51 54.03	2.7160	S. 24 17 26.9	6.676
WEDNESDAY 22.					FRIDAY 24.				
0	16 40 16.87	2.8081	S. 25 55 8.9	2.721	0	18 54 36.80	2.7095	S. 24 10 41.0	6.853
1	16 43 5.45	2.8111	25 57 46.1	2.518	1	18 57 19.17	2.7028	24 3 44.6	7.047
2	16 45 54.20	2.8138	26 0 11.1	2.315	2	19 0 1.14	2.6961	23 56 37.8	7.242
3	16 48 43.11	2.8164	26 2 23.9	2.111	3	19 2 42.70	2.6892	23 49 20.8	7.436
4	16 51 32.17	2.8187	26 4 24.4	1.906	4	19 5 23.84	2.6822	23 41 53.5	7.639
5	16 54 21.36	2.8208	26 6 12.6	1.701	5	19 8 4.56	2.6751	23 34 16.1	7.842
6	16 57 10.67	2.8227	26 7 48.5	1.495	6	19 10 44.85	2.6678	23 26 28.7	8.045
7	17 0 0.09	2.8244	26 9 12.0	1.288	7	19 13 24.70	2.6605	23 18 31.5	8.248
8	17 2 49.60	2.8258	26 10 23.1	1.082	8	19 16 4.11	2.6532	23 10 24.5	8.451
9	17 5 39.19	2.8271	26 11 21.9	0.876	9	19 18 43.08	2.6457	23 2 7.9	8.654
10	17 8 28.85	2.8282	26 12 8.2	0.668	10	19 21 21.59	2.6381	22 53 41.7	8.857
11	17 11 18.57	2.8290	26 12 42.0	0.460	11	19 23 59.65	2.6304	22 45 6.2	9.060
12	17 14 8.33	2.8296	26 13 3.4	0.252	12	19 26 37.24	2.6226	22 36 21.4	9.263
13	17 16 58.12	2.8299	26 13 12.3	-0.044	13	19 29 14.36	2.6147	22 27 27.5	9.466
14	17 19 47.92	2.8301	26 13 8.7	+0.164	14	19 31 51.00	2.6067	22 18 24.5	9.669
15	17 22 37.73	2.8300	26 12 52.6	0.373	15	19 34 27.16	2.5987	22 9 12.7	9.872
16	17 25 27.52	2.8296	26 12 24.0	0.580	16	19 37 2.84	2.5907	21 59 52.1	10.075
17	17 28 17.28	2.8290	26 11 43.0	0.788	17	19 39 38.04	2.5826	21 50 22.8	10.278
18	17 31 7.00	2.8283	26 10 49.5	0.995	18	19 42 12.75	2.5743	21 40 45.0	10.481
19	17 33 56.67	2.8273	26 9 43.6	1.203	19	19 44 46.96	2.5661	21 30 58.8	10.684
20	17 36 46.27	2.8260	26 8 25.2	1.410	20	19 47 20.68	2.5578	21 21 4.3	10.887
21	17 39 35.79	2.8246	26 6 54.4	1.616	21	19 49 53.90	2.5496	21 11 1.7	11.090
22	17 42 25.22	2.8230	26 5 11.3	1.822	22	19 52 26.63	2.5412	21 0 51.1	11.293
23	17 45 14.55	2.8211	26 3 15.8	2.028	23	19 54 58.85	2.5328	20 50 32.6	11.496
24	17 48 3.75	2.8189	S. 26 1 8.0	2.233	24	19 57 30.56	2.5243	S. 20 40 6.3	11.699

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 25.					MONDAY 27.				
0	19 57 30.56	2.5243	S. 20 40 6.3	10.502	0	21 49 13.42	2.1475	S. 10 28 24.9	14.229
1	20 0 1.77	2.5159	20 29 32.4	10.627	1	21 51 22.08	2.1412	10 14 10.1	14.262
2	20 2 32.47	2.5074	20 18 51.0	10.751	2	21 53 30.36	2.1348	9 59 53.5	14.293
3	20 5 2.66	2.4989	20 8 2.3	10.873	3	21 55 38.26	2.1287	9 45 35.0	14.323
4	20 7 32.34	2.4904	19 57 6.3	10.993	4	21 57 45.80	2.1225	9 31 14.8	14.350
5	20 10 1.51	2.4820	19 46 3.2	11.109	5	21 59 52.96	2.1164	9 16 53.0	14.376
6	20 12 30.18	2.4735	19 34 53.2	11.224	6	22 1 59.77	2.1105	9 2 29.7	14.401
7	20 14 58.33	2.4649	19 23 36.3	11.337	7	22 4 6.22	2.1046	8 48 4.9	14.425
8	20 17 25.97	2.4564	19 12 12.7	11.448	8	22 6 12.32	2.0988	8 33 38.7	14.447
9	20 19 53.10	2.4479	19 0 42.5	11.557	9	22 8 18.08	2.0931	8 19 11.3	14.467
10	20 22 19.72	2.4394	18 49 5.9	11.663	10	22 10 23.49	2.0874	8 4 42.7	14.486
11	20 24 45.83	2.4309	18 37 22.9	11.768	11	22 12 28.57	2.0819	7 50 13.0	14.503
12	20 27 11.43	2.4224	18 25 33.7	11.870	12	22 14 33.32	2.0765	7 35 42.3	14.520
13	20 29 36.52	2.4139	18 13 38.5	11.970	13	22 16 37.75	2.0711	7 21 10.6	14.535
14	20 32 1.10	2.4055	18 1 37.3	12.068	14	22 18 41.85	2.0658	7 6 38.1	14.548
15	20 34 25.18	2.3972	17 49 30.3	12.164	15	22 20 45.64	2.0607	6 52 4.8	14.560
16	20 36 48.76	2.3888	17 37 17.6	12.257	16	22 22 49.13	2.0556	6 37 30.9	14.571
17	20 39 11.83	2.3803	17 24 59.4	12.348	17	22 24 52.31	2.0505	6 22 56.3	14.582
18	20 41 34.40	2.3721	17 12 35.8	12.438	18	22 26 55.19	2.0456	6 8 21.1	14.590
19	20 43 56.48	2.3638	17 0 6.8	12.527	19	22 28 57.78	2.0408	5 53 45.5	14.597
20	20 46 18.06	2.3555	16 47 32.6	12.612	20	22 31 0.08	2.0360	5 39 9.5	14.603
21	20 48 39.14	2.3473	16 34 53.4	12.695	21	22 33 2.10	2.0313	5 24 33.2	14.607
22	20 50 59.73	2.3391	16 22 9.2	12.777	22	22 35 3.84	2.0268	5 9 56.7	14.610
23	20 53 19.83	2.3310	S. 16 9 20.2	12.856	23	22 37 5.31	2.0223	S. 4 55 20.0	14.612
SUNDAY 26.					TUESDAY 28.				
0	20 55 39.45	2.3229	S. 15 56 26.5	12.933	0	22 39 6.51	2.0178	S. 4 40 43.2	14.613
1	20 57 58.58	2.3149	15 43 28.2	13.008	1	22 41 7.45	2.0136	4 26 6.4	14.613
2	21 0 17.24	2.3069	15 30 25.5	13.082	2	22 43 8.14	2.0093	4 11 29.6	14.612
3	21 2 35.41	2.2989	15 17 18.4	13.154	3	22 45 8.57	2.0052	3 56 52.9	14.609
4	21 4 53.11	2.2911	15 4 7.0	13.223	4	22 47 8.76	2.0012	3 42 16.5	14.605
5	21 7 10.34	2.2833	14 50 51.6	13.290	5	22 49 8.71	1.9972	3 27 40.3	14.601
6	21 9 27.11	2.2755	14 37 32.2	13.356	6	22 51 8.42	1.9933	3 13 4.4	14.595
7	21 11 43.40	2.2678	14 24 8.9	13.420	7	22 53 7.90	1.9895	2 58 28.9	14.588
8	21 13 59.24	2.2602	14 10 41.8	13.482	8	22 55 7.16	1.9858	2 43 53.8	14.580
9	21 16 14.63	2.2527	13 57 11.0	13.542	9	22 57 6.20	1.9822	2 29 19.3	14.571
10	21 18 29.56	2.2451	13 43 36.7	13.600	10	22 59 5.02	1.9786	2 14 45.3	14.561
11	21 20 44.04	2.2376	13 29 59.0	13.656	11	23 1 3.63	1.9752	2 0 12.0	14.549
12	21 22 58.07	2.2303	13 16 18.0	13.710	12	23 3 2.04	1.9718	1 45 39.4	14.537
13	21 25 11.67	2.2230	13 2 33.8	13.763	13	23 5 0.25	1.9686	1 31 7.6	14.523
14	21 27 24.83	2.2158	12 48 46.4	13.814	14	23 6 58.27	1.9654	1 16 36.6	14.510
15	21 29 37.56	2.2086	12 34 56.1	13.863	15	23 8 56.10	1.9623	1 2 6.4	14.495
16	21 31 49.86	2.2015	12 21 2.8	13.911	16	23 10 53.75	1.9593	0 47 37.2	14.478
17	21 34 1.74	2.1945	12 7 6.8	13.956	17	23 12 51.22	1.9564	0 33 9.0	14.461
18	21 36 13.20	2.1875	11 53 8.1	14.000	18	23 14 48.52	1.9536	0 18 41.9	14.443
19	21 38 24.25	2.1807	11 39 6.8	14.042	19	23 16 45.65	1.9508	S. 0 4 15.9	14.424
20	21 40 34.88	2.1738	11 25 3.0	14.083	20	23 18 42.61	1.9481	N. 0 10 9.0	14.404
21	21 42 45.11	2.1672	11 10 56.8	14.122	21	23 20 39.42	1.9455	0 24 32.6	14.383
22	21 44 54.94	2.1606	10 56 48.3	14.160	22	23 22 36.07	1.9429	0 38 54.9	14.361
23	21 47 4.38	2.1540	10 42 37.6	14.195	23	23 24 32.57	1.9405	0 53 15.9	14.337
24	21 49 13.42	2.1475	S. 10 28 24.9	14.229	24	23 26 28.93	1.9383	N. 1 7 35.4	14.313

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 29.					FRIDAY 31.				
0	23 26 28.93	1.9383	N. 1 7 35.4	14.313	0	0 58 17.68	1.9149	N. 11 52 14.7	12.266
1	23 28 25.16	1.9360	1 21 53.5	14.290	1	1 0 12.61	1.9161	12 4 28.9	12.207
2	23 30 21.25	1.9338	1 36 10.2	14.265	2	1 2 7.61	1.9173	12 16 39.5	12.146
3	23 32 17.21	1.9317	1 50 25.3	14.238	3	1 4 2.69	1.9187	12 28 46.4	12.084
4	23 34 13.05	1.9297	2 4 38.8	14.211	4	1 5 57.85	1.9199	12 40 49.6	12.023
5	23 36 8.77	1.9278	2 18 50.6	14.183	5	1 7 53.09	1.9213	12 52 49.1	11.961
6	23 38 4.38	1.9259	2 33 0.7	14.154	6	1 9 48.41	1.9228	13 4 44.9	11.898
7	23 39 59.88	1.9241	2 47 9.1	14.124	7	1 11 43.82	1.9243	13 16 36.9	11.834
8	23 41 55.27	1.9224	3 1 15.6	14.093	8	1 13 39.32	1.9258	13 28 25.0	11.769
9	23 43 50.57	1.9208	3 15 20.3	14.062	9	1 15 34.92	1.9273	13 40 9.2	11.704
10	23 45 45.77	1.9193	3 29 23.1	14.030	10	1 17 30.62	1.9288	13 51 49.5	11.639
11	23 47 40.88	1.9178	3 43 23.9	13.997	11	1 19 26.42	1.9308	14 3 25.9	11.573
12	23 49 35.91	1.9165	3 57 22.8	13.964	12	1 21 22.32	1.9326	14 14 58.2	11.505
13	23 51 30.86	1.9152	4 11 19.6	13.929	13	1 23 18.33	1.9344	14 26 26.5	11.438
14	23 53 25.73	1.9139	4 25 14.3	13.894	14	1 25 14.45	1.9363	14 37 50.8	11.370
15	23 55 20.53	1.9128	4 39 6.9	13.858	15	1 27 10.69	1.9383	14 49 10.9	11.301
16	23 57 15.26	1.9117	4 52 57.3	13.821	16	1 29 7.04	1.9402	15 0 26.9	11.232
17	23 59 9.93	1.9108	5 6 45.4	13.783	17	1 31 3.51	1.9422	15 11 38.7	11.162
18	0 1 4.55	1.9098	5 20 31.3	13.746	18	1 33 0.10	1.9443	15 22 46.3	11.091
19	0 2 59.11	1.9089	5 34 14.9	13.707	19	1 34 56.82	1.9464	15 33 49.6	11.019
20	0 4 53.62	1.9082	5 47 56.1	13.667	20	1 36 53.67	1.9485	15 44 48.6	10.947
21	0 6 48.09	1.9075	6 1 34.9	13.626	21	1 38 50.64	1.9507	15 55 43.2	10.874
22	0 8 42.52	1.9069	6 15 11.2	13.584	22	1 40 47.75	1.9529	16 6 33.5	10.802
23	0 10 36.92	1.9063	N. 6 28 45.0	13.542	23	1 42 44.99	1.9552	N. 16 17 19.4	10.727
THURSDAY 30.					SATURDAY, JANUARY 1, 1898.				
0	0 12 31.28	1.9058	N. 6 42 16.3	13.500	0	1 44 42.37	1.9575	N. 16 28 0.7	10.652
1	0 14 25.62	1.9054	6 55 45.0	13.456	PHASES OF THE MOON.				
2	0 16 19.93	1.9051	7 9 11.0	13.412					
3	0 18 14.23	1.9048	7 22 34.4	13.367					
4	0 20 8.51	1.9047	7 35 55.1	13.322					
5	0 22 2.79	1.9046	7 49 13.0	13.275	☉ Full Moon Dec. 8 16 54.4 ☾ Last Quarter 16 16 21.9 ● New Moon 23 7 55.2 ☾ First Quarter 30 7 26.7				
6	0 23 57.06	1.9045	8 2 28.1	13.228					
7	0 25 51.33	1.9045	8 15 40.4	13.181					
8	0 27 45.60	1.9047	8 28 49.8	13.133					
9	0 29 39.89	1.9048	8 41 56.3	13.083	☾ Apogee Dec. 7 22.6 ☾ Perigee 22 15.3				
10	0 31 34.18	1.9050	8 54 59.8	13.033					
11	0 33 28.49	1.9053	9 8 0.3	12.983					
12	0 35 22.82	1.9057	9 20 57.7	12.932					
13	0 37 17.17	1.9061	9 33 52.1	12.880					
14	0 39 11.55	1.9066	9 46 43.3	12.827					
15	0 41 5.96	1.9071	9 59 31.3	12.774					
16	0 43 0.40	1.9077	10 12 16.2	12.721					
17	0 44 54.88	1.9084	10 24 57.8	12.666					
18	0 46 49.41	1.9092	10 37 36.1	12.611					
19	0 48 43.98	1.9099	10 50 11.1	12.555					
20	0 50 38.60	1.9108	11 2 42.7	12.498					
21	0 52 33.28	1.9118	11 15 10.9	12.442					
22	0 54 28.02	1.9128	11 27 35.7	12.384					
23	0 56 22.82	1.9138	11 39 57.0	12.325					
24	0 58 17.68	1.9149	N. 11 52 14.7	12.266					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	SUN W.	94 20 19	3084	95 48 48	3100	97 16 58	3116	98 44 48	3131
	α Aquilæ W.	48 35 28	3860	49 49 28	3822	51 4 7	3789	52 19 21	3756
	α Arietis E.	52 14 0	2742	50 38 16	2758	49 2 53	2775	47 27 52	2790
	Aldebaran E.	84 48 4	2775	83 13 4	2791	81 38 24	2806	80 4 4	2821
2	SUN W.	105 59 28	3204	107 25 32	3217	108 51 21	3231	110 16 54	3243
	α Aquilæ W.	58 42 15	3655	59 59 50	3642	61 17 39	3630	62 35 41	3620
	α Arietis E.	39 37 49	2867	38 4 48	2883	36 32 7	2898	34 59 45	2912
	Aldebaran E.	72 17 8	2892	70 44 39	2905	69 12 27	2919	67 40 32	2931
	Pollux E.	114 19 33	2856	112 46 18	2868	111 13 18	2879	109 40 32	2891
3	SUN W.	117 21 4	3301	118 45 14	3312	120 9 12	3322	121 32 58	3332
	α Aquilæ W.	69 8 7	3587	70 26 55	3585	71 45 46	3582	73 4 40	3581
	Fomalhaut W.	44 21 56	3785	45 37 14	3750	46 53 8	3719	48 9 35	3691
	Aldebaran E.	60 5 0	2994	58 34 40	3007	57 4 36	3019	55 34 47	3030
	Pollux E.	102 0 8	2941	100 28 41	2950	98 57 26	2959	97 26 22	2967
4	α Aquilæ W.	79 39 22	3581	80 58 17	3583	82 17 10	3586	83 36 0	3587
	Fomalhaut W.	54 38 20	3589	55 57 6	3576	57 16 7	3562	58 35 23	3550
	α Pegasi W.	31 52 51	3573	33 11 55	3534	34 31 42	3500	35 52 6	3471
	Aldebaran E.	48 9 19	3090	46 40 57	3103	45 12 51	3115	43 45 0	3129
	Pollux E.	89 53 35	3006	88 23 30	3013	86 53 33	3020	85 23 45	3026
5	α Aquilæ W.	90 9 21	3607	91 27 48	3612	92 46 9	3618	94 4 24	3623
	Fomalhaut W.	65 14 33	3507	66 34 49	3500	67 55 13	3495	69 15 43	3489
	α Pegasi W.	42 41 7	3370	44 3 58	3356	45 27 5	3345	46 50 25	3333
	Pollux E.	77 56 32	3053	76 27 25	3058	74 58 24	3062	73 29 28	3067
	Regulus E.	114 52 13	3035	113 22 44	3039	111 53 19	3043	110 23 59	3047
6	α Aquilæ W.	100 33 54	3661	101 51 23	3670	103 8 42	3679	104 25 51	3689
	Fomalhaut W.	75 59 26	3471	77 20 22	3470	78 41 20	3467	80 2 21	3466
	α Pegasi W.	53 49 52	3493	55 14 12	3487	56 38 39	3481	58 3 13	3476
	Pollux E.	66 6 5	3086	64 37 38	3088	63 9 14	3091	61 40 54	3094
	Regulus E.	102 58 24	3062	101 29 28	3064	100 0 34	3066	98 31 43	3068
7	Fomalhaut W.	86 47 44	3462	88 8 51	3463	89 29 57	3463	90 51 2	3463
	α Pegasi W.	65 7 21	3256	66 32 24	3252	67 57 32	3248	69 22 44	3246
	α Arietis W.	21 32 8	3180	22 58 41	3168	24 25 28	3158	25 52 27	3151
	Pollux E.	54 20 3	3107	52 52 2	3110	51 24 4	3112	49 56 9	3114
	Regulus E.	91 7 59	3075	89 39 19	3075	88 10 39	3076	86 42 0	3077
8	Fomalhaut W.	97 36 11	3471	98 57 7	3475	100 17 59	3479	101 38 47	3481
	α Pegasi W.	76 29 33	3232	77 55 4	3230	79 20 38	3227	80 46 15	3225
	α Arietis W.	33 9 30	3120	34 37 15	3116	36 5 5	3112	37 33 0	3109
	Pollux E.	42 37 15	3126	41 9 37	3129	39 42 3	3133	38 14 33	3136
	Regulus E.	79 18 51	3077	77 50 13	3076	76 21 34	3075	74 52 54	3074
	JUPITER E.	117 44 36	3148	116 17 25	3148	114 50 13	3146	113 22 59	3145
9	α Pegasi W.	87 54 58	3214	89 20 50	3213	90 46 44	3211	92 12 40	3209
	α Arietis W.	44 53 39	3091	46 21 59	3088	47 50 23	3085	49 18 51	3081
	Regulus E.	67 29 16	3069	66 0 28	3066	64 31 37	3065	63 2 44	3063
	JUPITER E.	106 6 14	3134	104 38 46	3132	103 11 15	3130	101 43 42	3127

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	SUN W.	100 12 20	3147	101 39 33	3161	103 6 29	3176	104 33 7	3190
	α Aquilæ W.	53 35 7	3732	54 51 20	3709	56 7 58	3639	57 24 57	3671
	α Arietis E.	45 53 11	2805	44 18 50	2821	42 44 50	2837	41 11 10	2852
	Aldebaran E.	78 30 4	2835	76 56 22	2850	75 22 59	2865	73 49 55	2878
2	SUN W.	111 42 12	3256	113 7 15	3267	114 32 5	3279	115 56 41	3290
	α Aquilæ W.	63 53 54	3611	65 12 16	3603	66 30 47	3598	67 49 24	3592
	α Arietis E.	33 27 42	2928	31 55 59	2944	30 24 36	2961	28 53 34	2977
	Aldebaran E.	66 8 53	2945	64 37 31	2958	63 6 25	2970	61 35 35	2982
	Pollux E.	108 8 1	2901	106 35 43	2912	105 3 39	2921	103 31 47	2931
3	SUN W.	122 56 33	3341	124 19 57	3351	125 43 10	3359	127 6 13	3368
	α Aquilæ W.	74 23 35	3579	75 42 32	3579	77 1 29	3579	78 20 26	3580
	Fomalhaut W.	49 26 32	3666	50 43 55	3643	52 1 43	3623	53 19 52	3606
	Aldebaran E.	54 5 12	3043	52 35 52	3054	51 6 46	3066	49 37 55	3078
	Pollux E.	95 55 28	2976	94 24 45	2984	92 54 12	2992	91 23 49	2999
4	α Aquilæ W.	84 54 48	3591	86 13 32	3594	87 32 13	3598	88 50 49	3602
	Fomalhaut W.	59 54 52	3539	61 14 33	3530	62 34 24	3522	63 54 24	3514
	α Pegasi W.	37 13 3	3445	38 34 29	3423	39 56 20	3402	41 18 34	3386
	Aldebaran E.	42 17 25	3142	40 50 6	3155	39 23 3	3170	37 56 18	3186
	Pollux E.	83 54 4	3031	82 24 30	3038	80 55 4	3043	79 25 45	3048
5	α Aquilæ W.	95 22 33	3630	96 40 35	3637	97 58 29	3644	99 16 16	3652
	Fomalhaut W.	70 36 19	3485	71 57 0	3481	73 17 45	3478	74 38 34	3475
	α Pegasi W.	48 13 58	3324	49 37 42	3315	51 1 36	3306	52 25 40	3300
	Pollux E.	72 0 38	3071	70 31 53	3074	69 3 12	3078	67 34 36	3082
	Regulus E.	108 54 44	3051	107 25 34	3053	105 56 27	3056	104 27 24	3059
6	α Aquilæ W.	105 42 50	3700	106 59 37	3712	108 16 11	3725	109 32 32	3737
	Fomalhaut W.	81 23 23	3464	82 44 27	3463	84 5 32	3463	85 26 38	3463
	α Pegasi W.	59 27 52	3271	60 52 37	3267	62 17 27	3263	63 42 22	3259
	Pollux E.	60 12 37	3097	58 44 24	3100	57 16 14	3102	55 48 7	3105
	Regulus E.	97 2 54	3070	95 34 8	3071	94 5 23	3073	92 36 40	3074
7	Fomalhaut W.	92 12 7	3464	93 33 11	3466	94 54 13	3468	96 15 13	3470
	α Pegasi W.	70 47 59	3242	72 13 18	3240	73 38 40	3237	75 4 5	3235
	α Arietis W.	27 19 35	3143	28 46 52	3136	30 14 18	3130	31 41 51	3125
	Pollux E.	48 28 16	3117	47 0 27	3119	45 32 40	3121	44 4 56	3124
	Regulus E.	85 13 22	3077	83 44 44	3078	82 16 7	3077	80 47 29	3077
8	Fomalhaut W.	102 59 32	3486	104 20 12	3489	105 40 48	3495	107 1 18	3501
	α Pegasi W.	82 11 54	3223	83 37 36	3220	85 3 21	3219	86 29 8	3216
	α Arietis W.	39 0 59	3105	40 29 3	3101	41 57 11	3098	43 25 23	3095
	Pollux E.	36 47 7	3140	35 19 46	3144	33 52 30	3149	32 25 20	3154
	Regulus E.	73 24 13	3073	71 55 31	3073	70 26 48	3071	68 58 3	3069
	JUPITER E.	111 55 42	3143	110 28 24	3140	109 1 3	3138	107 33 40	3136
9	α Pegasi W.	93 38 39	3208	95 4 39	3205	96 30 42	3204	97 56 47	3202
	α Arietis W.	50 47 24	3078	52 16 0	3074	53 44 41	3071	55 13 26	3067
	Regulus E.	61 33 49	3061	60 4 52	3059	58 35 52	3056	57 6 49	3054
	JUPITER E.	100 16 5	3124	98 48 25	3122	97 20 42	3119	95 52 55	3116

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LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
10	<i>α</i> Pegasi W.	99 22 54	3200	100 49 3	3198	102 15 14	3198	103 41 26	3196
	<i>α</i> Arietis W.	56 42 16	3064	58 11 10	3060	59 40 9	3056	61 9 13	3052
	Aldebaran W.	25 33 23	3359	26 56 26	3324	28 20 10	3304	29 44 29	3267
	Regulus E.	55 37 43	3052	54 8 34	3049	52 39 22	3046	51 10 6	3043
	JUPITER E.	94 25 5	3113	92 57 11	3110	91 29 13	3106	90 1 11	3103
	Spica E.	109 40 35	3049	108 11 23	3046	106 42 7	3043	105 12 47	3039
11	<i>α</i> Arietis W.	68 35 47	3030	70 5 23	3026	71 35 4	3020	73 4 52	3015
	Aldebaran W.	36 52 41	3173	38 19 23	3158	39 46 22	3144	41 13 38	3131
	Regulus E.	43 42 50	3026	42 13 10	3023	40 43 26	3019	39 13 37	3015
	JUPITER E.	82 39 54	3083	81 11 24	3078	79 42 48	3073	78 14 6	3069
	Spica E.	97 44 57	3019	96 15 8	3014	94 45 13	3009	93 15 12	3005
12	<i>α</i> Arietis W.	80 35 30	2986	82 6 0	2981	83 36 37	2973	85 7 23	2967
	Aldebaran W.	48 33 42	3073	50 2 24	3063	51 31 19	3052	53 0 27	3042
	JUPITER E.	70 49 9	3043	69 19 50	3038	67 50 24	3032	66 20 51	3026
	Spica E.	85 43 32	2977	84 12 51	2971	82 42 2	2965	81 11 6	2958
13	<i>α</i> Arietis W.	92 43 22	2931	94 15 2	2922	95 46 53	2914	97 18 54	2905
	Aldebaran W.	60 29 16	2991	61 59 40	2981	63 30 16	2971	65 1 5	2960
	JUPITER E.	58 51 6	2993	57 20 44	2985	55 50 13	2978	54 19 33	2971
	Spica E.	73 34 14	2923	72 2 24	2914	70 30 23	2906	68 58 12	2897
	SATURN E.	116 39 8	2984	115 8 35	2975	113 37 51	2965	112 6 55	2957
	VENUS E.	117 33 37	3405	116 11 26	3395	114 49 4	3386	113 26 31	3375
14	Aldebaran W.	72 38 33	2906	74 10 44	2894	75 43 10	2883	77 15 50	2872
	Pollux W.	30 33 34	2936	32 5 7	2919	33 37 2	2901	35 9 19	2884
	JUPITER E.	46 43 52	2932	45 12 14	2925	43 40 27	2917	42 8 30	2909
	Spica E.	61 14 24	2851	59 41 2	2841	58 7 27	2831	56 33 39	2820
	SATURN E.	104 29 15	2906	102 57 4	2896	101 24 40	2884	99 52 1	2873
	VENUS E.	106 30 43	3319	105 6 54	3308	103 42 52	3295	102 18 35	3285
	SUN E.	121 39 45	3220	120 13 59	3209	118 48 0	3196	117 21 46	3184
15	Aldebaran W.	85 3 2	2810	86 37 17	2798	88 11 48	2784	89 46 37	2771
	Pollux W.	42 56 3	2805	44 30 25	2788	46 5 8	2773	47 40 11	2757
	Spica E.	48 41 4	2763	47 5 48	2751	45 30 16	2739	43 54 28	2726
	SATURN E.	92 5 3	2813	90 30 52	2800	88 56 24	2787	87 21 39	2774
	VENUS E.	95 13 25	3216	93 47 35	3202	92 21 28	3188	90 55 4	3173
	SUN E.	110 6 52	3119	108 39 5	3105	107 11 1	3091	105 42 40	3076
16	Aldebaran W.	97 45 7	2702	99 21 44	2688	100 58 40	2674	102 35 55	2659
	Pollux W.	55 40 38	2678	57 17 47	2663	58 55 17	2646	60 33 9	2629
	Spica E.	35 51 15	2663	34 13 45	2649	32 35 57	2636	30 57 51	2624
	SATURN E.	79 23 25	2704	77 46 50	2689	76 9 55	2675	74 32 41	2659
	VENUS E.	83 38 28	3094	82 10 11	3078	80 41 34	3060	79 12 36	3044
	SUN E.	98 16 20	2999	96 46 6	2983	95 15 32	2967	93 44 38	2950
17	Pollux W.	68 48 7	2547	70 28 15	2530	72 8 47	2512	73 49 43	2496
	Regulus W.	31 46 13	2541	33 26 29	2523	35 7 10	2504	36 48 17	2487
	SATURN E.	66 21 20	2582	64 42 0	2566	63 2 19	2550	61 22 15	2535
	VENUS E.	71 42 31	2957	70 11 24	2939	68 39 54	2921	67 8 2	2902
	SUN E.	86 4 47	2864	84 31 42	2847	82 58 15	2829	81 24 25	2811

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Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
10	<i>a</i> Pegasi W.	105 7 40	3195	106 33 55	3193	108 0 12	3193	109 26 30	3191
	<i>a</i> Arietis W.	62 38 21	3048	64 7 34	3043	65 36 53	3039	67 6 17	3034
	Aldebaran W.	31 9 19	3244	32 34 36	3225	34 0 16	3206	35 26 18	3188
	Regulus E.	49 40 47	3040	48 11 24	3037	46 41 57	3034	45 12 26	3030
	JUPITER E.	88 33 5	3099	87 4 54	3096	85 36 39	3091	84 8 19	3087
	Spica E.	103 43 22	3035	102 13 53	3031	100 44 19	3028	99 14 41	3023
11	<i>a</i> Arietis W.	74 34 46	3009	76 4 47	3005	77 34 54	2999	79 5 8	2993
	Aldebaran W.	42 41 10	3119	44 8 57	3107	45 36 58	3096	47 5 13	3084
	Regulus E.	37 43 43	3012	36 13 45	3008	34 43 42	3004	33 13 34	3000
	JUPITER E.	76 45 19	3065	75 16 26	3060	73 47 27	3054	72 18 21	3049
	Spica E.	91 45 5	3000	90 14 52	2994	88 44 32	2989	87 14 6	2983
12	<i>a</i> Arietis W.	86 38 17	2960	88 9 20	2954	89 40 31	2946	91 11 52	2939
	Aldebaran W.	54 29 48	3032	55 59 21	3022	57 29 7	3012	58 59 5	3001
	JUPITER E.	64 51 10	3019	63 21 21	3013	61 51 24	3006	60 21 19	3000
	Spica E.	79 40 1	2952	78 8 48	2945	76 37 26	2938	75 5 55	2930
13	<i>a</i> Arietis W.	98 51 6	2897	100 23 29	2887	101 56 4	2878	103 28 51	2869
	Aldebaran W.	66 32 8	2950	68 3 24	2939	69 34 53	2928	71 6 36	2917
	JUPITER E.	52 48 44	2963	51 17 45	2956	49 46 37	2948	48 15 19	2941
	Spica E.	67 25 49	2888	65 53 15	2880	64 20 30	2870	62 47 33	2861
	SATURN E.	110 35 48	2947	109 4 29	2937	107 32 57	2927	106 1 13	2916
	VENUS E.	112 3 46	3365	110 40 49	3354	109 17 40	3343	107 54 18	3332
14	Aldebaran W.	78 48 45	2859	80 21 56	2848	81 55 22	2835	83 29 4	2823
	Pollux W.	36 41 58	2868	38 14 58	2852	39 48 19	2835	41 22 1	2820
	JUPITER E.	40 36 23	2901	39 4 6	2894	37 31 40	2887	35 59 5	2880
	Spica E.	54 59 37	2809	53 25 21	2798	51 50 50	2787	50 16 5	2775
	SATURN E.	98 19 8	2862	96 46 0	2850	95 12 37	2838	93 38 58	2825
	VENUS E.	100 54 4	3270	99 29 18	3257	98 4 16	3244	96 38 59	3230
	SUN E.	115 55 18	3172	114 28 35	3159	113 1 37	3146	111 34 23	3132
15	Aldebaran W.	91 21 43	2757	92 57 7	2744	94 32 49	2730	96 8 49	2716
	Pollux W.	49 15 35	2741	50 51 20	2726	52 27 25	2710	54 3 51	2695
	Spica E.	42 18 23	2713	40 42 1	2701	39 5 23	2689	37 28 28	2675
	SATURN E.	85 46 37	2760	84 11 17	2746	82 35 38	2732	80 59 41	2718
	VENUS E.	89 28 22	3138	88 1 22	3122	86 34 3	3126	85 6 25	3110
	SUN E.	104 14 1	3061	102 45 4	3047	101 15 49	3030	99 46 14	3015
16	Aldebaran W.	104 13 30	2645	105 51 24	2630	107 29 38	2615	109 8 12	2601
	Pollux W.	62 11 24	2613	63 50 1	2597	65 29 0	2580	67 8 22	2564
	Spica E.	29 19 28	2610	27 40 47	2599	26 1 50	2588	24 22 38	2577
	SATURN E.	72 55 6	2644	71 17 11	2629	69 38 55	2613	68 0 18	2598
	VENUS E.	77 43 18	3027	76 13 39	3009	74 43 38	2993	73 13 16	2974
	SUN E.	92 13 23	2934	90 41 47	2916	89 9 49	2899	87 37 29	2882
17	Pollux W.	75 31 2	2479	77 12 45	2461	78 54 53	2445	80 37 24	2427
	Regulus W.	38 29 49	2469	40 11 46	2450	41 54 9	2433	43 36 57	2415
	SATURN E.	59 41 50	2518	58 1 2	2503	56 19 53	2487	54 38 22	2472
	VENUS E.	65 35 46	2884	64 3 7	2866	62 30 5	2848	60 56 39	2830
	SUN E.	79 50 11	2793	78 15 34	2775	76 40 33	2756	75 5 8	2738

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
18	Pollux W.	82 20 20	2420	84 3 40	2394	85 47 24	2376	87 31 33	2339
	Regulus W.	45 20 10	2398	47 3 48	2380	48 47 52	2363	50 32 20	2345
	SATURN E.	52 56 29	2456	51 14 14	2441	49 31 38	2426	47 48 40	2411
	VENUS E.	59 22 50	2811	57 48 37	2793	56 14 0	2775	54 38 59	2757
	SUN E.	73 29 19	2720	71 53 6	2701	70 16 28	2684	68 39 27	2666
19	Regulus W.	59 20 58	2260	61 7 56	2245	62 55 17	2229	64 43 2	2212
	VENUS E.	46 38 3	2669	45 0 42	2653	43 22 59	2637	41 44 54	2621
	SUN E.	60 28 16	2577	58 48 50	2560	57 9 0	2543	55 28 47	2527
20	Regulus W.	73 47 34	2139	75 37 34	2125	77 27 55	2113	79 18 35	2099
	JUPITER W.	34 14 27	2240	36 1 55	2220	37 49 53	2201	39 38 19	2184
	SUN E.	47 2 6	2450	45 19 42	2436	43 36 58	2422	41 53 55	2409
21	Regulus W.	88 36 32	2045	90 28 56	2035	92 21 35	2027	94 14 27	2019
	JUPITER W.	48 46 33	2111	50 37 15	2099	52 28 15	2089	54 19 31	2079
	Spica W.	34 35 39	2057	36 27 44	2047	38 20 5	2037	40 12 41	2028
	SUN E.	33 14 17	2354	31 29 36	2345	29 44 42	2337	27 59 37	2331
25	SUN W.	23 17 46	2441	25 0 23	2453	26 42 42	2467	28 24 41	2482
	α Pegasi E.	57 0 1	2336	55 14 54	2361	53 30 23	2387	51 46 29	2414
	α Arietis E.	98 46 44	2127	96 56 26	2141	95 6 30	2156	93 16 56	2170
26	SUN W.	36 49 12	2564	38 28 56	2583	40 8 14	2601	41 47 7	2621
	α Arietis E.	84 14 57	2253	82 27 48	2271	80 41 6	2289	78 54 50	2307
	Aldebaran E.	116 32 8	2310	114 46 23	2326	113 1 1	2342	111 16 2	2358
27	SUN W.	49 54 55	2719	51 31 9	2741	53 6 55	2761	54 42 14	2782
	α Arietis E.	70 10 15	2402	68 26 43	2421	66 43 38	2441	65 1 2	2460
	Aldebaran E.	102 37 14	2446	100 54 45	2465	99 12 42	2483	97 31 5	2502
28	SUN W.	62 32 7	2884	64 4 46	2905	65 36 59	2924	67 8 47	2945
	α Aquilæ W.	45 11 47	3849	46 25 59	3795	47 41 6	3750	48 57 0	3711
	α Arietis E.	56 34 57	2560	54 55 7	2580	53 15 45	2600	51 36 50	2619
	Aldebaran E.	89 9 34	2596	87 30 34	2616	85 52 1	2635	84 13 54	2654
29	SUN W.	74 41 30	3043	76 10 50	3060	77 39 48	3079	79 8 23	3098
	α Aquilæ W.	55 25 15	3582	56 44 9	3566	58 3 20	3554	59 22 45	3543
	α Arietis E.	43 28 53	2718	41 52 37	2737	40 16 46	2756	38 41 21	2775
	Aldebaran E.	76 9 38	2747	74 34 1	2766	72 58 49	2784	71 24 0	2802
30	SUN W.	86 25 56	3183	87 52 26	3198	89 18 37	3214	90 44 29	3229
	α Aquilæ W.	66 2 4	3516	67 22 10	3515	68 42 17	3515	70 2 24	3515
	Fomalhaut W.	41 37 6	3816	42 51 52	3774	44 7 23	3735	45 23 33	3702
	Aldebaran E.	63 35 42	2889	62 3 9	2906	60 30 58	2923	58 59 8	2939
	Pollux E.	105 30 35	2842	103 57 1	2855	102 23 45	2869	100 50 47	2883
31	SUN W.	97 49 36	3297	99 13 51	3310	100 37 51	3322	102 1 37	3331
	α Aquilæ W.	76 42 34	3530	78 2 25	3534	79 22 12	3539	80 41 53	3545
	Fomalhaut W.	51 51 51	3589	53 10 37	3574	54 29 40	3561	55 48 57	3550
	Aldebaran E.	51 25 5	3020	49 55 17	3035	48 25 48	3052	46 56 39	3068
	Pollux E.	93 10 9	2946	91 38 48	2957	90 7 41	2968	88 36 48	2979

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
18	Pollux W.	89 16 6	2342	91 1 4	2326	92 46 25	2310	94 32 10	2294
	Regulus W.	52 17 14	2328	54 2 33	2311	55 48 16	2294	57 34 25	2277
	SATURN E.	46 5 21	2396	44 21 41	2383	42 37 42	2369	40 53 23	2356
	VENUS E.	53 3 35	2739	51 27 47	2722	49 51 36	2704	48 15 1	2687
	SUN E.	67 2 1	2648	65 24 11	2630	63 45 57	2612	62 7 18	2595
19	Regulus W.	66 31 11	2197	68 19 43	2182	70 8 38	2167	71 57 55	2153
	VENUS E.	40 6 28	2606	38 27 41	2591	36 48 34	2577	35 9 7	2564
	SUN E.	53 48 11	2511	52 7 13	2494	50 25 52	2479	48 44 9	2465
20	Regulus W.	81 9 35	2087	83 0 54	2076	84 52 30	2065	86 44 23	2055
	JUPITER W.	41 27 11	2167	43 16 28	2152	45 6 8	2137	46 56 10	2124
	SUN E.	40 10 33	2396	38 26 53	2385	36 42 57	2374	34 58 45	2363
21	Regulus W.	96 7 31	2012	98 0 47	2006	99 54 12	2000	101 47 46	1995
	JUPITER W.	56 11 2	2070	58 2 47	2062	59 54 44	2055	61 46 52	2048
	Spica W.	42 5 32	2019	43 58 36	2012	45 51 51	2006	47 45 16	2000
	SUN E.	26 14 22	2325	24 28 59	2320	22 43 29	2317	20 57 55	2316
25	SUN W.	30 6 20	2497	31 47 37	2513	33 28 32	2530	35 9 4	2547
	α Pegasi E.	50 3 14	2443	48 20 41	2476	46 38 54	2510	44 57 54	2547
	α Arietis E.	91 27 44	2186	89 38 55	2202	87 50 31	2218	86 2 31	2236
26	SUN W.	43 25 33	2640	45 3 33	2660	46 41 7	2680	48 18 14	2699
	α Arietis E.	77 9 0	2326	75 23 38	2344	73 38 43	2363	71 54 15	2382
	Aldebaran E.	109 31 27	2375	107 47 16	2392	106 3 30	2410	104 20 9	2428
27	SUN W.	56 17 6	2802	57 51 31	2822	59 25 30	2843	60 59 2	2864
	α Arietis E.	63 18 53	2480	61 37 12	2500	59 55 59	2520	58 15 14	2540
	Aldebaran E.	95 49 54	2520	94 9 9	2540	92 28 51	2559	90 48 59	2578
28	SUN W.	68 40 9	2965	70 11 6	2985	71 41 38	3004	73 11 46	3023
	α Aquilæ W.	50 13 35	3677	51 30 46	3647	52 48 30	3622	54 6 41	3600
	α Arietis E.	49 58 21	2639	48 20 19	2659	46 42 44	2678	45 5 35	2698
	Aldebaran E.	82 36 12	2673	80 58 56	2692	79 22 5	2710	77 45 39	2729
29	SUN W.	80 36 35	3115	82 4 26	3132	83 31 57	3149	84 59 7	3167
	α Aquilæ W.	60 42 22	3535	62 2 8	3527	63 22 2	3523	64 42 1	3519
	α Arietis E.	37 6 21	2795	35 31 47	2815	33 57 39	2835	32 23 56	2854
	Aldebaran E.	69 49 35	2820	68 15 33	2838	66 41 54	2855	65 8 37	2872
30	SUN W.	92 10 4	3244	93 35 21	3258	95 0 22	3271	96 25 7	3285
	α Aquilæ W.	71 22 31	3517	72 42 36	3519	74 2 39	3523	75 22 38	3525
	Fomalhaut W.	46 40 18	3673	47 57 34	3648	49 15 17	3626	50 33 23	3606
	Aldebaran E.	57 27 38	2955	55 56 29	2972	54 25 41	2988	52 55 13	3004
	Pollux E.	99 18 7	2896	97 45 43	2909	96 13 36	2922	94 41 45	2934
31	SUN W.	103 25 10	3345	104 48 30	3355	106 11 38	3365	107 34 35	3374
	α Aquilæ W.	82 1 28	3550	83 20 57	3556	84 40 19	3563	85 59 34	3569
	Fomalhaut W.	57 8 26	3539	58 28 7	3531	59 47 57	3523	61 7 56	3517
	Aldebaran E.	45 27 50	3083	43 59 20	3101	42 31 11	3117	41 3 22	3134
	Pollux E.	87 6 9	2989	85 35 42	2998	84 5 27	3008	82 35 24	3017

GREENWICH MEAN TIME.

GREENWICH MEAN TIME.													
JANUARY.						FEBRUARY.							
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.		
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.			
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m		
1	20 7 59.44	+14.262	-21 53 31.4	+60.76	1 28.5	1	19 41 49.56	- 8.304	-18 22 19.2	-30.57	22 49.6		
2	20 13 34.61	13.655	21 28 44.8	63.06	1 24.2	2	19 41 11.45	- 0.884	18 34 11.8	28.77	22 45.4		
3	20 18 54.15	12.958	21 3 7.9	64.94	1 25.5	3	19 41 6.55	+ 0.461	18 45 18.6	26.77	22 42.1		
4	20 23 55.83	12.165	20 36 51.4	66.34	1 26.6	4	19 41 32.94	1.724	18 55 35.1	24.58	22 39.1		
5	20 28 37.19	11.264	20 10 7.9	67.18	1 27.3	5	19 42 28.64	2.902	19 4 57.0	22.22	22 36.5		
6	20 32 55.50	+10.243	-19 43 11.9	+67.37	1 27.6	6	19 43 51.55	+ 3.993	-19 13 20.8	-19.74	22 34.3		
7	20 36 47.83	9.096	19 16 19.8	66.84	1 27.5	7	19 45 39.62	4.999	19 20 43.7	17.14	22 32.5		
8	20 40 11.04	7.816	18 49 49.8	65.51	1 26.9	8	19 47 50.82	5.922	19 27 2.9	14.44	22 31.1		
9	20 43 1.89	6.398	18 24 2.2	63.30	1 25.8	9	19 50 23.24	6.768	19 32 16.2	11.65	22 30.0		
10	20 45 17.05	4.842	17 59 18.9	60.15	1 24.1	10	19 53 15.10	7.542	19 36 21.7	8.80	22 29.2		
11	20 46 53.29	+ 3.156	-17 36 2.4	+56.05	1 21.7	11	19 56 24.74	+ 8.250	-19 39 17.9	- 3.87	22 28.7		
12	20 47 47.63	+ 1.354	17 14 36.0	50.98	1 18.7	12	19 59 50.62	8.896	19 41 3.0	- 2.88	22 28.4		
13	20 47 57.54	- 0.542	16 55 22.5	44.99	1 14.8	13	20 3 31.32	9.486	19 41 35.9	+ 0.15	22 28.3		
14	20 47 21.16	2.495	16 38 43.0	38.17	1 10.3	14	20 7 25.55	10.025	19 40 55.4	3.83	22 28.5		
15	20 45 57.68	4.460	16 24 55.7	30.67	1 4.9	15	20 11 32.12	10.516	19 39 0.7	6.34	22 28.9		
16	20 43 47.44	- 6.380	-16 14 14.8	+22.67	0 58.8	16	20 15 49.96	+10.965	-19 35 50.9	+ 9.48	22 29.4		
17	20 40 52.33	8.188	16 6 49.2	14.44	0 52.0	17	20 20 18.11	11.374	19 31 25.4	12.65	22 30.1		
18	20 37 15.87	9.814	16 2 41.4	+ 6.23	0 44.5	18	20 24 55.65	11.749	19 25 43.5	15.84	22 30.9		
19	20 33 3.29	11.186	16 1 47.7	- 1.67	0 36.3	19	20 29 41.81	12.092	19 18 44.8	19.05	22 31.8		
20	20 28 21.42	12.245	16 3 57.1	9.00	0 27.7	20	20 34 35.84	12.406	19 10 28.9	22.28	22 32.9		
21	20 23 18.40	-12.943	-16 8 53.5	-15.54	0 18.8	21	20 39 37.10	+12.694	-19 0 55.4	+25.51	22 34.1		
22	20 18 3.23	13.255	16 16 15.7	21.15	0 9.6	22	20 44 44.96	12.958	18 50 4.3	28.75	22 35.4		
23	20 12 45.25	13.178	16 25 40.4	25.73	0 0.4	23	20 49 58.90	13.200	18 37 55.3	32.00	22 36.7		
24	20 7 33.59	12.737	16 36 42.3	29.26	23 42.5	24	20 55 18.43	13.424	18 24 28.3	35.25	22 38.2		
25	20 2 36.57	11.966	16 48 57.1	31.82	23 34.0	25	21 0 43.11	13.630	18 9 43.3	38.50	22 39.7		
26	19 58 1.36	-10.928	-17 2 2.4	-33.47	23 26.0	26	21 6 12.54	+13.820	-17 53 40.2	+41.75	22 41.4		
27	19 53 53.70	9.681	17 15 37.5	34.33	23 18.5	27	21 11 46.37	13.997	17 36 19.2	45.00	22 43.1		
28	19 50 17.84	8.289	17 29 25.0	34.52	23 11.5	28	21 17 24.28	14.161	17 17 40.2	48.25	22 44.8		
29	19 47 16.54	6.809	17 43 10.2	34.16	23 5.2	29	21 23 5.99	14.313	16 57 43.4	51.49	22 46.6		
30	19 44 51.31	5.292	17 56 40.8	33.32	22 59.4	30	21 28 51.22	14.456	16 36 29.0	54.72	22 48.5		
31	19 43 2.48	- 3.781	-18 9 46.5	-32.10	22 54.2	31	21 34 39.78	+14.590	-16 13 57.1	+57.94	22 50.4		
32	19 41 49.56	- 2.304	-18 22 19.2	-30.57	22 49.6	32	21 40 31.47	+14.716	-15 50 7.9	+61.16	22 52.4		
Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.	Day of the Month.	5th.	10th.	15th.	20th.	25th.
Semidiameter .	3.0	3.4	3.9	4.5	5.0	5.0	4.6	Semidiameter .	4.1	3.8	3.5	3.2	3.0
Hor. Parallax .	8.0	9.0	10.4	12.0	13.2	13.3	12.3	Hor. Parallax .	11.1	10.0	9.2	8.5	8.0

NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.

NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.

GREENWICH MEAN TIME.

MARCH.						APRIL.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	21 23 5.99	+14.313	-16 57 43.4	+ 51.49	22 46.6	1	0 43 24.84	+18.265	+ 3 28 37.7	+198.86	0 3.0
2	21 28 51.22	14.456	16 36 29.0	54.72	22 48.5	2	0 50 45.06	18.418	4 24 24.8	140.02	0 6.4
3	21 34 39.78	14.590	16 13 57.1	57.94	22 50.4	3	0 58 8.82	18.560	5 20 36.0	140.85	0 9.9
4	21 40 31.47	14.716	15 50 7.9	61.16	22 52.4	4	1 5 35.85	18.690	6 17 2.8	141.58	0 13.4
5	21 46 26.11	14.836	15 25 1.6	64.57	22 54.4	5	1 13 5.80	18.808	7 13 36.3	141.40	0 17.0
6	21 52 23.57	+14.951	-14 58 38.4	+ 67.57	22 56.5	6	1 20 38.19	+18.893	+ 8 10 6.3	+141.02	0 20.6
7	21 58 23.73	15.062	14 30 58.7	70.75	22 58.6	7	1 28 12.45	18.957	9 6 21.6	140.17	0 24.2
8	22 4 26.50	15.169	14 2 2.6	73.92	23 0.7	8	1 35 47.87	18.989	10 2 10.4	138.82	0 27.8
9	22 10 31.81	15.273	13 31 50.5	77.08	23 2.9	9	1 43 23.65	18.986	10 57 20.4	136.92	0 31.5
10	22 16 39.60	15.376	13 0 22.6	80.24	23 5.1	10	1 50 58.86	18.942	11 51 38.3	134.48	0 35.2
11	22 22 49.83	+15.477	-12 27 39.2	+ 83.38	23 7.4	11	1 58 32.48	+18.852	+12 44 51.2	+131.51	0 38.8
12	22 29 2.50	15.578	11 53 40.6	86.50	23 9.7	12	2 6 3.39	18.715	13 36 46.3	128.00	0 42.4
13	22 35 17.59	15.680	11 18 27.3	89.61	23 12.1	13	2 13 30.40	18.528	14 27 11.0	123.97	0 45.9
14	22 41 35.14	15.784	10 41 59.6	92.70	23 14.5	14	2 20 52.31	18.289	15 15 53.2	119.46	0 49.3
15	22 47 55.21	15.889	10 4 18.1	95.77	23 16.9	15	2 28 7.86	17.998	16 2 41.8	114.52	0 52.6
16	22 54 17.82	+15.996	- 9 25 22.9	+ 98.82	23 19.4	16	2 35 15.81	+17.656	+16 47 27.2	+109.20	0 55.8
17	23 0 43.04	16.106	8 45 14.8	101.85	23 21.9	17	2 42 14.94	17.263	17 30 0.9	103.56	0 58.8
18	23 7 10.96	16.221	8 3 54.5	104.84	23 24.5	18	2 49 4.04	16.821	18 10 15.9	97.65	1 1.7
19	23 13 41.67	16.339	7 21 22.7	107.80	23 27.1	19	2 55 42.00	16.335	18 48 6.3	91.53	1 4.4
20	23 20 15.27	16.462	6 37 40.2	110.72	23 29.8	20	3 2 7.77	15.805	19 23 28.2	85.27	1 6.9
21	23 26 51.87	+16.589	- 5 52 48.1	+113.61	23 32.5	21	3 8 20.32	+15.235	+19 56 18.3	+ 78.90	1 9.2
22	23 33 31.58	16.722	5 6 47.3	116.45	23 35.3	22	3 14 18.73	14.626	20 26 35.0	72.48	1 11.2
23	23 40 14.54	16.860	4 19 39.2	119.22	23 38.1	23	3 20 2.11	13.984	20 54 17.3	66.05	1 13.0
24	23 47 0.88	17.002	3 31 25.5	121.92	23 41.0	24	3 25 29.68	13.308	21 19 25.3	59.62	1 14.5
25	23 53 50.70	17.150	2 42 8.0	124.53	23 44.0	25	3 30 40.67	12.602	21 41 59.6	53.24	1 15.7
26	0 0 44.12	+17.303	- 1 51 48.9	+127.04	23 47.0	26	3 35 34.37	+11.868	+22 2 1.5	+ 46.92	1 16.7
27	0 7 41.26	17.460	1 0 30.9	129.44	23 50.1	27	3 40 10.12	11.107	22 19 32.5	40.68	1 17.3
28	0 14 42.21	17.620	0 8 16.9	131.70	23 53.2	28	3 44 27.31	10.322	22 34 34.6	34.32	1 17.6
29	0 21 47.02	17.782	+ 0 44 49.5	133.80	23 56.4	29	3 48 25.38	9.514	22 47 9.9	28.44	1 17.6
30	0 28 55.74	17.945	1 38 44.1	135.71	23 59.7	30	3 52 3.80	8.685	22 57 20.5	22.46	1 17.3
31	0 36 8.37	+18.106	+ 2 33 22.0	+137.41		31	3 55 22.09	+ 7.856	+23 5 8.6	+ 16.56	1 16.6
32	0 43 24.84	+18.265	+ 3 28 37.7	+138.86	0 3.0	32	3 58 19.82	+ 6.972	+23 10 36.3	+ 10.76	1 15.6

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.	Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.
Semidiameter . . .	2.8	2.7	2.6	2.6	2.5	2.5	Semidiameter . . .	2.5	2.6	2.7	2.9	3.3	3.7
Hor. Parallax . . .	7.6	7.2	7.0	6.8	6.6	6.6	Hor. Parallax . . .	6.6	6.8	7.1	7.8	8.7	9.8

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign - indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.						JUNE.								
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.			
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.				
	h m s	"	" ' "	"	h m		h m s	"	" ' "	"	h m			
1	3 55 22.09	+7.836	+23 5 8.6	+16.36	1 16.6	1	3 38 8.00	- 0.679	+15 36 52.8	-19.42	22 53.3			
2	3 58 19.82	6.972	23 10 36.3	10.76	1 15.6	2	3 37 59.90	+ 0.006	15 30 12.0	19.98	22 49.5			
3	4 0 56.63	6.094	23 13 45.9	+ 5.06	1 14.3	3	3 38 8.40	0.704	15 25 42.0	8.32	22 46.0			
4	4 3 12.24	5.205	23 14 39.7	- 0.36	1 12.6	4	3 38 33.76	1.410	15 23 22.4	- 3.12	22 42.7			
5	4 5 6.43	4.310	23 13 19.7	6.08	1 10.5	5	3 39 16.11	2.180	15 23 11.2	+ 2.18	22 39.8			
6	4 6 39.11	+3.413	+23 9 48.5	-11.50	1 8.0	6	3 40 15.51	+ 2.890	+15 25 5.7	+ 7.34	22 37.1			
7	4 7 50.29	2.520	23 4 8.6	16.80	1 5.3	7	3 41 31.96	3.539	15 29 2.2	12.34	22 34.7			
8	4 8 40.14	1.636	22 56 23.0	21.98	1 2.2	8	3 43 5.39	4.245	15 34 56.2	17.15	22 32.6			
9	4 9 8.97	+0.767	22 46 35.0	27.00	0 58.8	9	3 44 55.69	4.945	15 42 42.8	21.72	22 30.8			
10	4 9 17.26	-0.074	22 34 48.4	31.84	0 55.0	10	3 47 2.73	5.640	15 52 16.5	26.05	22 29.2			
11	4 9 5.70	-0.883	+22 21 8.1	-36.47	0 50.8	11	3 49 26.38	+ 6.330	+16 3 31.1	+30.13	22 27.9			
12	4 8 35.22	1.650	22 5 39.7	40.84	0 46.4	12	3 52 6.50	7.023	16 16 20.7	33.95	22 26.9			
13	4 7 46.90	2.367	21 48 30.0	44.91	0 41.6	13	3 55 2.96	7.691	16 30 38.7	37.50	22 26.1			
14	4 6 42.09	3.023	21 29 46.8	48.62	0 36.6	14	3 58 15.64	8.364	16 46 18.4	40.76	22 25.6			
15	4 5 22.33	3.611	21 9 39.6	51.91	0 31.4	15	4 1 44.41	9.033	17 3 12.9	43.73	22 25.4			
16	4 3 49.39	-4.120	+20 48 19.0	-54.72	0 25.9	16	4 5 29.21	+ 9.700	+17 21 14.9	+46.39	22 25.5			
17	4 2 5.25	4.544	20 25 57.1	57.00	0 20.2	17	4 9 29.98	10.364	17 40 17.3	48.75	22 25.8			
18	4 0 12.00	4.876	20 2 47.5	58.69	0 14.4	18	4 13 46.68	11.027	18 0 12.6	50.80	22 26.4			
19	3 58 11.88	5.116	19 39 4.9	59.75	0 8.5	19	4 18 19.27	11.690	18 20 53.1	52.32	22 27.2			
20	3 56 7.22	5.256	19 15 4.7	60.14	0 3.3	20	4 23 7.79	12.354	18 42 10.9	53.91	22 28.3			
21	3 54 0.38	-5.298	+18 51 3.4	-59.84	23 50.4	21	4 28 12.25	+13.019	+19 3 57.9	+54.95	22 29.7			
22	3 51 53.69	5.242	18 27 17.7	58.85	23 44.4	22	4 33 32.70	13.685	19 26 5.7	55.64	22 31.4			
23	3 49 49.49	5.093	18 4 4.2	57.19	23 38.5	23	4 39 9.16	14.354	19 48 25.5	55.95	22 33.3			
24	3 47 49.93	4.856	17 41 38.8	54.84	23 32.8	24	4 45 1.69	15.025	20 10 48.2	55.87	22 35.5			
25	3 45 57.06	4.536	17 20 16.9	51.88	23 27.1	25	4 51 10.32	15.656	20 33 4.1	55.39	22 37.9			
26	3 44 12.79	-4.122	+17 0 12.8	-48.37	23 21.6	26	4 57 35.07	+16.366	+20 55 3.4	+54.48	22 40.7			
27	3 42 38.78	3.681	16 41 39.1	44.36	23 16.3	27	5 4 15.89	17.035	21 16 35.6	53.13	22 43.7			
28	3 41 16.56	5.161	16 24 47.0	39.92	23 11.2	28	5 11 12.71	17.699	21 37 30.0	51.32	22 47.0			
29	3 40 7.39	2.395	16 9 45.7	35.13	23 6.3	29	5 18 25.37	18.354	21 57 35.2	49.03	22 50.5			
30	3 39 12.35	1.986	15 56 42.8	30.07	23 1.7	30	5 25 53.60	18.996	22 16 39.6	46.25	22 54.2			
31	3 38 32.32	-1.345	+15 45 43.8	-24.81	22 57.4	31	5 33 37.05	+19.621	+22 34 31.2	+42.96	22 58.2			
32	3 38 8.00	-0.679	+15 36 52.8	-19.42	22 53.3	32	5 41 35.21	+20.222	+22 50 57.8	+39.18	23 2.5			
Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.	Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter .	4.2	4.8	5.4	5.9	6.1	6.0	5.6	Semidiameter . . .	5.1	4.6	4.1	3.6	3.3	3.0
Hor. Parallax .	11.2	12.8	14.3	15.5	16.1	15.8	14.9	Hor. Parallax . . .	13.6	12.2	10.8	9.7	8.6	7.8

NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.

GREENWICH MEAN TIME.

JULY.						AUGUST.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	5 33 37.05	+19.621	+22 34 31.2	+42.96	22 58.2	1	9 54 51.77	+16.532	+14 6 8.8	-101.17	1 13.6
2	5 41 35.21	20.222	22 50 57.8	39.18	23 2.5	2	10 1 24.02	16.157	13 25 28.3	102.17	1 16.2
3	5 49 47.44	20.792	23 5 47.6	34.88	23 7.0	3	10 7 47.37	15.791	12 44 26.3	102.96	1 18.6
4	5 58 12.90	21.323	23 18 48.4	30.10	23 11.7	4	10 14 2.05	15.434	12 3 7.5	103.58	1 20.9
5	6 6 50.60	21.810	23 29 48.7	24.85	23 16.6	5	10 20 8.25	15.085	11 21 36.1	104.01	1 23.1
6	6 15 39.34	+22.244	+23 38 37.9	+19.18	23 21.6	6	10 26 6.20	+14.745	+10 39 56.2	-104.29	1 25.1
7	6 24 37.81	22.518	23 45 6.2	13.12	23 26.8	7	10 31 56.09	14.413	9 58 11.6	104.40	1 27.0
8	6 33 44.46	22.926	23 49 5.1	6.74	23 32.1	8	10 37 38.09	14.088	9 16 26.2	104.56	1 28.7
9	6 42 57.69	23.164	23 50 27.8	+0.11	23 37.5	9	10 43 12.37	13.770	8 34 43.3	104.18	1 30.3
10	6 52 15.77	23.330	23 49 9.1	-6.70	23 42.9	10	10 48 39.09	13.457	7 53 6.4	103.86	1 31.8
11	7 1 36.93	+23.421	+23 45 5.6	-13.60	23 48.4	11	10 53 58.36	+13.149	+7 11 38.8	-103.42	1 33.2
12	7 10 59.39	23.438	23 38 16.0	20.52	23 53.8	12	10 59 10.29	12.845	6 30 23.4	102.84	1 34.5
13	7 20 21.41	23.585	23 28 41.0	27.38	23 59.2	13	11 4 14.96	12.544	5 49 23.6	102.12	1 35.6
14	7 29 41.35	23.266	23 16 23.2	34.08		14	11 9 12.41	12.244	5 8 42.4	101.29	1 36.6
15	7 38 57.67	23.085	23 1 26.8	40.58	0 4.6	15	11 14 2.69	11.945	4 28 22.8	100.32	1 37.5
16	7 48 8.97	+22.848	+22 43 57.3	-46.83	0 9.8	16	11 18 45.79	+11.646	+3 48 27.8	-99.23	1 38.2
17	7 57 14.03	22.566	22 24 1.3	52.78	0 15.0	17	11 23 21.70	11.346	3 9 0.7	98.00	1 38.9
18	8 6 11.83	22.244	22 1 46.4	58.40	0 20.0	18	11 27 50.35	11.042	2 30 4.6	96.65	1 39.4
19	8 15 1.46	21.887	21 37 21.1	63.65	0 25.0	19	11 32 11.65	10.732	1 51 42.6	95.16	1 39.8
20	8 23 42.20	21.505	21 10 53.9	68.55	0 29.7	20	11 36 25.46	10.418	1 13 58.2	93.52	1 40.1
21	8 32 13.54	+21.104	+20 42 33.9	-73.06	0 34.3	21	11 40 31.66	+10.096	+0 36 54.8	-91.75	1 40.2
22	8 40 35.05	20.687	20 12 29.8	77.22	0 38.7	22	11 44 30.01	9.765	+0 0 36.1	89.79	1 40.2
23	8 48 46.46	20.262	19 40 50.5	81.00	0 43.0	23	11 48 20.27	9.422	-0 34 54.0	87.69	1 40.1
24	8 56 47.61	19.833	19 7 44.6	84.43	0 47.1	24	11 52 2.14	9.066	1 9 31.5	85.40	1 39.9
25	9 4 38.41	19.402	18 33 20.4	87.53	0 51.0	25	11 55 35.30	8.694	1 43 11.9	82.93	1 39.5
26	9 12 18.89	+18.973	+17 57 45.6	-90.31	0 54.7	26	11 58 59.33	+8.305	-2 15 50.4	-80.23	1 38.9
27	9 19 49.13	18.548	17 21 7.9	92.78	0 58.3	27	12 2 13.80	7.897	2 47 22.0	77.35	1 38.2
28	9 27 9.23	18.128	16 43 34.3	94.97	1 1.7	28	12 5 18.19	7.466	3 17 41.3	74.22	1 37.4
29	9 34 19.33	17.715	16 5 11.5	96.88	1 4.9	29	12 8 11.95	7.010	3 46 42.3	70.82	1 36.4
30	9 41 19.64	17.312	15 26 5.8	98.55	1 7.9	30	12 10 54.44	6.526	4 14 18.5	67.14	1 35.1
31	9 48 10.38	+16.918	+14 46 23.0	-99.98	1 10.8	31	12 13 24.95	+6.012	-4 40 22.7	-63.16	1 33.6
32	9 54 51.77	+16.532	+14 6 8.8	-101.17	1 13.6	32	12 15 42.74	+5.465	-5 4 47.4	-58.84	1 32.0

Day of the Month.	8th.	10th.	15th.	20th.	25th.	30th.	Day of the Month.	4th.	9th.	14th.	19th.	24th.	29th.
Semidiameter . . .	2.7	2.6	2.5	2.5	2.5	2.6	Semidiameter . . .	2.7	2.9	3.0	3.2	3.5	3.7
Hor. Parallax . . .	7.2	6.8	6.6	6.6	6.7	6.9	Hor. Parallax . . .	7.2	7.6	8.0	8.5	9.2	9.9

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign - indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.						OCTOBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	12 15 42.74	+5.465	-5 4 47.4	-58.84	1 32.0	1	11 36 46.99	+1.055	+2 36 40.8	+40.96	22 51.8
2	12 17 46.97	4.881	5 27 24.3	54.17	1 30.3	2	11 37 30.66	2.580	2 50 26.5	27.82	22 49.2
3	12 19 36.73	4.859	5 48 4.2	49.09	1 28.0	3	11 38 50.49	4.063	2 58 55.4	14.61	22 47.1
4	12 21 11.10	5.598	6 6 37.4	43.60	1 25.6	4	11 40 45.17	5.480	3 2 9.2	+1.60	22 45.6
5	12 22 29.08	2.894	6 22 53.2	37.64	1 22.9	5	11 43 12.83	6.809	3 0 15.6	-10.98	22 44.6
6	12 23 29.64	+2.146	-6 36 40.3	-31.19	1 20.0	6	11 46 11.21	+8.098	+2 53 26.8	-22.97	22 44.1
7	12 24 11.73	1.354	6 47 46.4	24.23	1 16.7	7	11 49 37.75	9.135	2 41 59.1	34.80	22 44.0
8	12 24 34.31	+0.520	6 55 59.1	16.73	1 13.1	8	11 53 29.74	10.158	2 26 11.7	44.60	22 44.3
9	12 24 36.39	-0.353	7 1 5.1	8.67	1 9.2	9	11 57 44.41	11.046	2 6 25.4	54.11	22 44.9
10	12 24 17.08	1.262	7 2 51.0	-0.06	1 5.0	10	12 2 19.07	11.824	1 43 2.0	62.68	22 45.8
11	12 23 35.63	-2.197	-7 1 3.8	+9.08	1 0.3	11	12 7 11.10	+12.495	+1 16 24.0	-70.32	22 47.0
12	12 22 31.51	5.150	6 55 31.0	18.72	0 55.3	12	12 12 18.04	13.068	0 46 53.7	77.05	22 48.3
13	12 21 4.44	4.104	6 46 1.6	28.78	0 49.9	13	12 17 37.65	13.532	+0 14 52.4	82.91	22 49.9
14	12 19 14.63	5.043	6 32 27.0	39.14	0 44.2	14	12 23 7.90	13.996	-0 19 19.4	87.94	22 51.6
15	12 17 2.66	5.946	6 14 42.1	49.62	0 38.1	15	12 28 46.97	14.290	0 55 22.7	92.21	22 53.4
16	12 14 29.74	-6.785	-5 52 46.0	+60.02	0 31.6	16	12 34 33.31	+14.562	-1 32 59.6	-95.75	22 55.3
17	12 11 37.72	7.533	5 26 43.9	70.08	0 24.8	17	12 40 25.55	14.783	2 11 53.7	98.65	22 57.3
18	12 8 29.15	8.158	4 56 47.6	79.48	0 17.7	18	12 46 22.53	14.999	2 51 50.3	100.97	22 59.4
19	12 5 7.35	8.631	4 23 17.1	87.87	0 10.4	19	12 52 23.28	15.098	3 32 36.0	102.76	23 1.6
20	12 1 36.34	8.920	3 46 40.8	94.90	0 3.0	20	12 58 26.99	15.206	4 13 59.1	104.08	23 3.7
21	11 58 0.83	-9.003	-3 7 35.4	+100.24	23 48.0	21	13 4 32.97	+15.289	-4 55 48.6	-104.98	23 5.9
22	11 54 25.98	8.861	2 26 45.3	103.58	23 40.7	22	13 10 40.72	15.333	5 37 55.3	105.52	23 8.1
23	11 50 57.36	8.484	1 45 1.2	104.71	23 33.5	23	13 16 49.78	15.400	6 20 10.8	105.72	23 10.3
24	11 47 40.60	7.874	1 3 17.8	103.51	23 26.6	24	13 22 59.81	15.435	7 2 27.5	105.63	23 12.6
25	11 44 41.18	7.041	-0 22 31.4	99.96	23 20.1	25	13 29 10.58	15.461	7 44 39.1	105.29	23 14.8
26	11 42 4.27	-6.003	+0 16 22.5	+94.18	23 14.0	26	13 35 21.89	+15.480	-8 26 39.6	-104.72	23 17.1
27	11 39 54.41	4.793	0 52 32.9	86.36	23 8.4	27	13 41 33.59	15.495	9 8 24.0	103.95	23 19.3
28	11 38 15.31	5.444	1 25 13.9	76.79	23 3.3	28	13 47 45.61	15.506	9 49 47.7	103.00	23 21.6
29	11 37 9.90	1.993	2 53 47.4	65.79	22 58.8	29	13 53 57.89	15.517	10 30 46.8	101.90	23 23.9
30	11 36 40.12	-0.422	2 17 43.5	53.74	22 55.0	30	14 0 10.43	15.528	11 11 17.5	100.65	23 26.2
31	11 36 46.99	+1.055	+2 36 40.8	+40.96	22 51.8	31	14 6 23.23	+15.539	-11 51 16.9	-99.28	23 28.4
32	11 37 30.66	+2.580	+2 50 26.5	+27.82	22 49.2	32	14 12 36.30	+15.551	-12 30 41.8	-97.79	23 30.7
Day of the Month.						Day of the Month.					
8d. 8th. 18th. 18th. 28d. 28th.						8d. 8th. 18th. 18th. 28d. 28th.					
Semidiameter . . . 4.1 4.5 4.9 5.1 5.1 4.6						Semidiameter . . . 4.0 3.4 3.0 2.7 2.5 2.4					
Hor. Parallax . . . 10.8 11.9 12.9 13.6 13.4 12.2						Hor. Parallax . . . 10.5 9.0 8.0 7.2 6.7 6.4					

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	14 12 36.30	+15.551	-12 30 41.8	-97.79	23 30.7	1	17 26 17.43	+16.781	-25 19 15.1	-21.20	0 44.0
2	14 18 49.70	15.566	13 9 29.8	96.20	23 33.0	2	17 33 0.15	16.776	25 27 2.4	17.74	0 46.7
3	14 25 3.50	15.584	13 47 38.4	94.51	23 35.3	3	17 39 42.59	16.758	25 33 26.1	14.23	0 49.5
4	14 31 17.76	15.605	14 25 5.7	92.74	23 37.6	4	17 46 24.41	16.724	25 38 25.0	10.67	0 52.3
5	14 37 32.56	15.629	15 1 49.5	90.89	23 39.9	5	17 53 5.22	16.674	25 41 58.0	7.07	0 55.0
6	14 43 47.97	+15.656	-15 37 48.0	-88.97	23 42.3	6	17 59 44.59	+16.604	-25 44 4.0	-3.43	0 57.7
7	14 50 4.07	15.687	16 12 59.5	86.98	23 44.6	7	18 6 22.01	16.511	25 44 42.5	+0.83	1 0.4
8	14 56 20.97	15.722	16 47 22.3	84.92	23 47.0	8	18 12 56.92	16.394	25 43 52.9	3.92	1 3.0
9	15 2 38.73	15.759	17 20 54.9	82.79	23 49.3	9	18 19 28.68	16.248	25 41 34.5	7.61	1 5.6
10	15 8 57.44	15.800	17 53 35.7	80.60	23 51.7	10	18 25 56.56	16.070	25 37 47.6	11.90	1 8.2
11	15 15 17.18	+15.845	-18 25 23.3	-78.36	23 54.1	11	18 32 19.74	+15.855	-25 32 32.3	+14.98	1 10.6
12	15 21 38.02	15.892	18 56 16.4	76.06	23 56.6	12	18 38 37.28	15.600	25 25 49.2	18.62	1 12.9
13	15 28 0.04	15.943	19 26 13.5	73.09	23 59.0	13	18 44 48.16	15.298	25 17 39.3	22.22	1 15.2
14	15 34 23.30	15.996	19 55 13.1	71.27		14	18 50 51.13	14.942	25 8 4.2	25.72	1 17.3
15	15 40 47.85	16.050	20 23 13.9	68.79	0 1.5	15	18 56 44.87	14.596	24 57 6.3	29.11	1 19.2
16	15 47 13.74	+16.107	-20 50 14.5	-66.25	0 4.0	16	19 2 27.83	+14.045	-24 44 48.3	+32.36	1 21.0
17	15 53 41.01	16.165	21 16 13.7	63.66	0 6.5	17	19 7 58.32	13.484	24 31 14.4	35.44	1 22.6
18	16 0 9.69	16.225	21 41 9.9	61.01	0 9.0	18	19 13 14.36	12.898	24 16 28.9	38.31	1 23.9
19	16 6 39.79	16.284	22 5 1.8	58.30	0 11.6	19	19 18 13.78	12.097	24 0 37.8	40.90	1 24.9
20	16 13 11.32	16.344	22 27 48.1	55.54	0 14.2	20	19 22 54.15	11.249	23 43 48.2	43.18	1 25.6
21	16 19 44.27	+16.402	-22 49 27.3	-52.72	0 16.8	21	19 27 12.77	+10.282	-23 26 8.3	+45.08	1 26.0
22	16 26 18.61	16.459	23 9 57.9	49.85	0 19.4	22	19 31 6.67	9.187	23 7 48.0	46.54	1 25.9
23	16 32 54.31	16.515	23 29 18.7	46.89	0 22.1	23	19 34 32.65	7.954	22 48 58.2	47.52	1 25.3
24	16 39 31.31	16.568	23 47 28.1	43.88	0 24.8	24	19 37 27.28	6.574	22 29 51.6	47.94	1 24.2
25	16 46 9.52	16.617	24 4 24.6	40.82	0 27.5	25	19 39 47.00	5.042	22 10 42.0	47.76	1 22.6
26	16 52 48.85	+16.661	-24 20 6.9	-37.70	0 30.2	26	19 41 28.10	+3.359	-21 51 44.3	+46.94	1 20.4
27	16 59 29.19	16.700	24 34 33.5	34.51	0 33.0	27	19 42 27.14	+1.537	21 33 14.0	45.47	1 17.4
28	17 6 10.40	16.733	24 47 43.0	31.27	0 35.7	28	19 42 40.89	-0.411	21 15 26.8	43.35	1 13.6
29	17 12 52.31	16.758	24 59 34.0	27.97	0 38.4	29	19 42 6.70	2.452	20 58 38.1	40.61	1 9.1
30	17 19 34.74	16.775	25 10 5.2	24.62	0 41.2	30	19 40 42.86	4.539	20 43 1.9	37.32	1 3.7
31	17 26 17.43	+16.781	-25 19 15.1	-21.20	0 44.0	31	19 38 28.92	-6.616	-20 28 50.4	+33.58	0 57.5
32	17 33 0.15	+16.776	-25 27 2.4	-17.74	0 46.7	32	19 35 26.01	-8.605	-20 16 12.7	+29.51	0 50.5

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.	Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.	32d.
Semidiameter . . .	2.4	2.3	2.3	2.3	2.4	2.4	Semidiameter .	2.5	2.6	2.8	3.1	3.5	4.0	4.6
Hor. Parallax . . .	6.2	6.2	6.1	6.1	6.2	6.4	Hor. Parallax .	6.6	7.0	7.5	8.2	9.2	10.6	12.2

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign - indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.							FEBRUARY.						
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.		
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.			
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m		
1	21 45 50.07	+11.437	-15 19 17.7	+63.76	3 0.3	1	23 55 59.22	+9.666	-0 14 46.1	+77.06	3 8.2		
2	21 50 23.78	11.372	14 53 36.2	64.68	3 0.9	2	23 59 50.63	9.619	+0 16 2.6	77.00	3 8.1		
3	21 54 55.90	11.306	14 27 33.2	65.57	3 1.5	3	0 3 40.90	9.571	0 46 49.5	76.90	3 8.0		
4	21 59 26.44	11.240	14 1 9.3	66.42	3 2.1	4	0 7 30.03	9.524	1 17 33.7	76.77	3 7.9		
5	22 3 55.40	11.175	13 34 25.4	67.24	3 2.6	5	0 11 18.03	9.476	1 48 14.5	76.61	3 7.8		
6	22 8 22.81	+11.110	-13 7 22.2	+68.02	3 3.1	6	0 15 4.88	+9.428	+2 18 51.3	+76.43	3 7.6		
7	22 12 48.68	11.046	12 40 0.6	68.77	3 3.6	7	0 18 50.58	9.380	2 49 23.2	76.22	3 7.4		
8	22 17 13.02	10.982	12 12 21.4	69.49	3 4.1	8	0 22 35.12	9.331	3 19 49.6	75.97	3 7.2		
9	22 21 35.83	10.919	11 44 25.5	70.17	3 4.5	9	0 26 18.49	9.283	3 50 9.8	75.70	3 7.0		
10	22 25 57.14	10.856	11 16 13.7	70.82	3 4.9	10	0 30 0.67	9.232	4 20 22.9	75.30	3 6.8		
11	22 30 16.95	+10.794	-10 47 46.8	+71.43	3 5.3	11	0 33 41.66	+9.183	+4 50 28.4	+75.06	3 6.5		
12	22 34 35.28	10.733	10 19 5.5	72.01	3 5.7	12	0 37 21.42	9.131	5 20 25.4	74.69	3 6.2		
13	22 38 52.15	10.672	9 50 10.8	72.55	3 6.0	13	0 40 59.94	9.079	5 50 13.4	74.30	3 5.9		
14	22 43 7.57	10.613	9 21 3.4	73.06	3 6.3	14	0 44 37.20	9.026	6 19 51.5	73.88	3 5.6		
15	22 47 21.56	10.554	8 51 44.0	73.54	3 6.6	15	0 48 13.19	8.972	6 49 19.2	73.43	3 5.3		
16	22 51 34.14	+10.495	-8 22 13.5	+73.99	3 6.9	16	0 51 47.87	+8.917	+7 18 35.7	+72.95	3 4.9		
17	22 55 45.32	10.438	7 52 32.6	74.41	3 7.1	17	0 55 21.22	8.861	7 47 40.5	72.45	3 4.5		
18	22 59 55.13	10.380	7 22 42.0	74.80	3 7.3	18	0 58 53.21	8.804	8 16 32.8	71.92	3 4.1		
19	23 4 3.59	10.324	6 52 42.5	75.16	3 7.5	19	1 2 23.81	8.745	8 45 12.1	71.36	3 3.7		
20	23 8 10.72	10.269	6 22 34.8	75.48	3 7.7	20	1 5 52.97	8.685	9 13 37.7	70.77	3 3.2		
21	23 12 16.53	+10.215	-5 52 19.6	+75.77	3 7.8	21	1 9 20.65	+8.623	+9 41 48.9	+70.16	3 2.7		
22	23 16 21.05	10.162	5 21 57.8	76.04	3 8.0	22	1 12 46.83	8.559	10 9 45.2	69.52	3 2.1		
23	23 20 24.30	10.110	4 51 29.9	76.27	3 8.1	23	1 16 11.45	8.493	10 37 25.8	68.86	3 1.6		
24	23 24 26.30	10.058	4 20 56.8	76.48	3 8.2	24	1 19 34.47	8.425	11 4 50.2	68.17	3 1.0		
25	23 28 27.07	10.007	3 50 19.1	76.66	3 8.3	25	1 22 55.82	8.354	11 31 57.7	67.45	3 0.4		
26	23 32 26.62	+9.957	-3 19 37.4	+76.81	3 8.4	26	1 26 15.44	+8.281	+11 58 47.7	+66.70	2 59.8		
27	23 36 24.97	9.907	2 48 52.6	76.93	3 8.4	27	1 29 33.27	8.205	12 25 19.4	65.93	2 59.2		
28	23 40 22.14	9.858	2 18 5.3	77.01	3 8.4	28	1 32 49.25	8.126	12 51 32.3	65.13	2 58.5		
29	23 44 18.14	9.809	1 47 16.3	77.06	3 8.4	29	1 36 3.27	8.043	13 17 25.6	64.30	2 57.8		
30	23 48 12.98	9.761	1 16 26.3	77.09	3 8.3	30	1 39 15.26	7.957	13 42 58.6	63.45	2 57.0		
31	23 52 6.67	+9.713	-0 45 36.0	+77.09	3 8.3	31	1 42 25.13	+7.866	+14 8 10.7	+62.56	2 56.2		
32	23 55 59.22	+9.666	-0 14 46.1	+77.06	3 8.2	32	1 45 32.78	+7.771	+14 33 1.1	+61.64	2 55.4		
Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.	Day of the Month.	5th.	10th.	15th.	20th.	25th.
Semidiameter .	8.3	8.6	8.9	9.3	9.6	10.0	10.5	Semidiameter .	11.0	11.5	12.1	12.8	13.6
Hor. Parallax .	8.6	8.9	9.2	9.6	10.0	10.4	10.8	Hor. Parallax .	11.4	11.9	12.6	13.3	14.0

NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.

GREENWICH MEAN TIME.

MARCH.						APRIL.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	1 36 3.27	+8.043	+13 17 25.6	+64.30	2 57.8	1	2 47 11.47	+2.088	+22 45 22.5	+20.50	2 6.4
2	1 39 15.26	7.957	13 42 58.6	63.45	2 57.0	2	2 47 57.40	1.742	22 53 7.2	18.22	2 3.2
3	1 42 25.13	7.866	14 8 10.7	62.56	2 56.2	3	2 48 34.91	1.386	22 59 56.1	15.85	1 59.9
4	1 45 32.78	7.771	14 33 1.1	61.64	2 55.4	4	2 49 3.75	1.020	23 5 47.1	13.39	1 56.5
5	1 48 38.07	7.671	14 57 29.1	60.69	2 54.6	5	2 49 23.70	0.645	23 10 38.1	10.84	1 52.9
6	1 51 40.89	+7.566	+15 21 33.9	+59.71	2 53.7	6	2 49 34.54	+0.262	+23 14 26.8	+ 8.19	1 49.1
7	1 54 41.14	7.456	15 45 14.8	58.70	2 52.8	7	2 49 36.13	-0.127	23 17 10.7	5.44	1 45.2
8	1 57 38.67	7.340	16 8 31.0	57.66	2 51.8	8	2 49 28.31	0.522	23 18 47.3	+ 2.59	1 41.1
9	2 0 33.35	7.218	16 31 21.9	56.58	2 50.7	9	2 49 10.99	0.980	23 19 14.3	- 0.36	1 36.9
10	2 3 25.01	7.089	16 53 46.5	55.47	2 49.6	10	2 48 44.10	1.380	23 18 29.3	5.40	1 32.5
11	2 6 13.51	+6.954	+17 15 44.1	+54.33	2 48.4	11	2 48 7.62	-1.780	+23 16 30.2	- 6.55	1 28.0
12	2 8 58.68	6.812	17 37 13.9	53.15	2 47.2	12	2 47 21.60	2.116	23 13 14.9	9.75	1 23.3
13	2 11 40.35	6.662	17 58 15.0	51.94	2 46.0	13	2 46 26.16	2.505	23 8 41.6	13.05	1 18.4
14	2 14 18.35	6.506	18 18 46.6	50.69	2 44.7	14	2 45 21.48	2.885	23 2 48.6	16.41	1 13.4
15	2 16 52.49	6.341	18 38 47.8	49.41	2 43.3	15	2 44 7.82	3.254	22 55 34.4	19.80	1 8.2
16	2 19 22.57	+6.168	+18 58 17.9	+48.09	2 41.9	16	2 42 45.50	-3.608	+22 46 57.9	-23.24	1 2.9
17	2 21 48.40	5.986	19 17 15.9	46.74	2 40.4	17	2 41 14.90	3.944	22 36 58.7	26.69	0 57.5
18	2 24 9.77	5.795	19 35 40.9	45.35	2 38.8	18	2 39 36.51	4.257	22 25 36.8	30.15	0 52.0
19	2 26 26.45	5.596	19 53 32.0	43.91	2 37.1	19	2 37 50.92	4.545	22 12 52.8	33.53	0 46.3
20	2 28 38.26	5.390	20 10 48.1	42.43	2 35.4	20	2 35 58.76	4.805	21 58 47.9	36.87	0 40.5
21	2 30 44.96	+5.170	+20 27 28.2	+40.91	2 33.6	21	2 34 0.71	-5.036	+21 43 24.0	-40.11	0 34.6
22	2 32 46.32	4.942	20 43 31.3	39.35	2 31.6	22	2 31 57.53	5.233	21 26 43.7	43.22	0 28.6
23	2 34 42.10	4.705	20 58 56.3	37.73	2 29.6	23	2 29 50.06	5.394	21 8 50.4	46.18	0 22.6
24	2 36 32.07	4.458	21 13 41.8	36.07	2 27.5	24	2 27 39.17	5.518	20 49 48.1	48.96	0 16.5
25	2 38 15.97	4.200	21 27 46.7	34.35	2 25.2	25	2 25 25.76	5.605	20 29 41.8	51.52	0 10.3
26	2 39 53.54	+3.931	+21 41 9.7	+32.57	2 22.9	26	2 23 10.76	-5.632	+20 8 36.9	-53.84	0 4.3
27	2 41 24.52	3.652	21 53 49.4	30.73	2 20.5	27	2 20 55.09	5.660	19 46 39.6	55.89	23 51.8
28	2 42 48.66	3.362	22 5 44.4	28.83	2 17.9	28	2 18 39.71	5.628	19 23 56.6	57.64	23 45.7
29	2 44 5.70	3.060	22 16 53.0	26.86	2 15.2	29	2 16 25.55	5.558	19 0 35.4	59.07	23 39.6
30	2 45 15.36	2.747	22 27 13.5	24.82	2 12.4	30	2 14 13.51	5.452	18 36 43.6	60.18	23 33.5
31	2 46 17.37	+2.423	+22 36 44.0	+22.70	2 9.5	31	2 12 4.44	-5.310	+18 12 29.1	-60.96	23 27.4
32	2 47 11.47	+2.088	+22 45 22.5	+20.50	2 6.4	32	2 9 59.18	-5.134	+17 48 0.0	-61.40	23 21.4

Day of the Month.	5d.	7th.	12th.	17th.	22d.	27th.	Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.
Semidiameter . . .	14.4	15.4	16.5	17.7	19.1	20.7	Semidiameter . . .	22.4	24.2	26.0	27.8	29.1	29.8
Hor. Parallax . . .	14.9	15.9	17.1	18.4	19.8	21.4	Hor. Parallax . . .	23.2	25.1	27.0	28.7	30.1	30.8

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign - indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	2 12 4.44	-3.310	+18 12 29.1	-60.96	23 27.4	1	2 6 17.30	+4.429	+11 2 22.6	+3.32	21 23.5
2	2 9 59.18	5.134	17 48 0.0	61.40	23 21.4	2	2 8 6.41	4.663	11 4 6.7	5.34	21 21.5
3	2 7 58.52	4.927	17 23 24.5	61.50	23 15.6	3	2 10 1.09	4.893	11 6 38.4	7.28	21 19.5
4	2 6 3.18	4.691	16 58 50.8	61.25	23 9.9	4	2 12 1.15	5.113	11 9 55.6	9.14	21 17.6
5	2 4 13.82	4.428	16 34 27.0	60.68	23 4.3	5	2 14 6.40	5.326	11 13 56.4	10.92	21 15.8
6	2 2 31.03	-4.141	+16 10 20.7	-39.79	22 58.8	6	2 16 16.66	+5.532	+11 18 38.9	+12.61	21 14.1
7	2 0 55.36	3.834	15 46 39.2	58.61	22 53.4	7	2 18 31.77	5.730	11 24 1.1	14.22	21 12.5
8	1 59 27.27	3.511	15 23 29.4	57.16	22 48.2	8	2 20 51.57	5.922	11 30 1.0	15.76	21 11.0
9	1 58 7.13	3.172	15 0 57.5	55.46	22 43.1	9	2 23 15.90	6.108	11 36 36.8	17.21	21 9.5
10	1 56 55.26	2.821	14 39 9.3	53.52	22 38.1	10	2 25 44.63	6.288	11 43 46.5	18.59	21 8.1
11	1 55 51.94	-2.460	+14 18 10.1	-51.37	22 33.2	11	2 28 17.61	+6.462	+11 51 28.4	+19.89	21 6.8
12	1 54 57.36	2.092	13 58 4.5	49.05	22 28.5	12	2 30 54.72	6.631	11 59 40.7	21.12	21 5.5
13	1 54 11.66	1.719	13 38 56.7	46.58	22 24.0	13	2 33 35.82	6.795	12 8 21.6	22.28	21 4.3
14	1 53 34.92	1.344	13 20 49.8	43.98	22 19.6	14	2 36 20.81	6.954	12 17 29.4	23.36	21 3.2
15	1 53 7.22	0.968	13 3 46.5	41.28	22 15.3	15	2 39 9.57	7.109	12 27 2.3	24.57	21 2.1
16	1 52 48.53	-0.593	+12 47 49.1	-38.51	22 11.2	16	2 42 1.99	+7.260	+12 36 58.6	+25.51	21 1.1
17	1 52 38.81	-0.220	12 32 58.8	35.68	22 7.2	17	2 44 57.98	7.407	12 47 16.8	26.19	21 0.1
18	1 52 37.97	+0.148	12 19 16.8	32.81	22 3.4	18	2 47 57.44	7.549	12 57 55.2	27.00	20 59.2
19	1 52 45.87	0.510	12 6 43.9	29.93	21 59.7	19	2 51 0.26	7.687	13 8 52.3	27.74	20 58.3
20	1 53 2.37	0.865	11 55 20.2	27.05	21 56.2	20	2 54 6.36	7.822	13 20 6.3	28.41	20 57.5
21	1 53 27.31	+1.214	+11 45 5.2	-24.20	21 52.8	21	2 57 15.65	+7.953	+13 31 35.7	+29.02	20 56.8
22	1 54 0.51	1.554	11 35 58.3	21.38	21 49.5	22	3 0 28.05	8.081	13 43 19.0	29.57	20 56.1
23	1 54 41.75	1.885	11 27 58.8	18.59	21 46.4	23	3 3 43.47	8.205	13 55 14.8	30.06	20 55.5
24	1 55 30.82	2.206	11 21 5.5	15.86	21 43.4	24	3 7 1.82	8.325	14 7 21.6	30.49	20 54.9
25	1 56 27.48	2.517	11 15 16.9	13.20	21 40.5	25	3 10 23.04	8.443	14 19 37.9	30.86	20 54.3
26	1 57 31.51	+2.819	+11 10 31.4	-10.60	21 37.8	26	3 13 47.05	+8.558	+14 32 2.4	+31.17	20 53.8
27	1 58 42.67	3.111	11 6 47.4	8.08	21 35.2	27	3 17 13.78	8.670	14 44 33.8	31.43	20 53.4
28	2 0 0.73	3.394	11 4 3.0	5.63	21 32.7	28	3 20 43.17	8.779	14 57 10.6	31.63	20 53.0
29	2 1 25.46	3.667	11 2 16.4	3.27	21 30.3	29	3 24 15.14	8.886	15 9 51.7	31.78	20 52.6
30	2 2 56.62	3.930	11 1 25.4	-0.99	21 27.9	30	3 27 49.65	8.991	15 22 35.9	31.88	20 52.3
31	2 4 33.97	+4.184	+11 1 28.1	+1.21	21 25.6	31	3 31 26.64	+9.093	+15 35 21.9	+31.93	20 52.0
32	2 6 17.30	+4.429	+11 2 22.6	+3.32	21 23.5	32	3 35 6.06	+9.193	+15 48 8.5	+31.93	20 51.7
Day of the Month.						Day of the Month.					
1st. 6th. 11th. 16th. 21st. 26th. 31st.						5th. 10th. 15th. 20th. 25th. 30th.					
Semidiameter . 29.8 29.0 27.6 25.8 23.9 22.1 20.3						Semidiameter . . . 18.8 17.4 16.1 15.0 14.0 13.2					
Hor. Parallax . 30.8 30.0 28.5 26.7 24.8 22.8 21.1						Hor. Parallax . . . 19.4 18.0 16.7 15.6 14.5 13.6					

NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.

GREENWICH MEAN TIME.

JULY.						AUGUST.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	3 31 26.64	+ 9.093	+15 35 21.9	+31.93	20 52.0	1	5 40 33.49	+11.487	+20 51 53.9	+13.80	20 59.8
2	3 35 6.06	9.193	15 48 8.5	31.93	20 51.7	2	5 45 9.83	11.538	20 56 57.2	12.07	21 0.5
3	3 38 47.86	9.291	16 0 54.6	31.89	20 51.5	3	5 49 47.37	11.587	21 1 33.2	10.92	21 1.2
4	3 42 31.99	9.387	16 13 38.9	31.80	20 51.3	4	5 54 26.07	11.634	21 5 41.4	9.75	21 1.9
5	3 46 18.41	9.482	16 26 20.5	31.66	20 51.2	5	5 59 5.87	11.679	21 9 21.3	8.57	21 2.6
6	3 50 7.08	+ 9.575	+16 38 58.2	+31.47	20 51.1	6	6 3 46.73	+11.722	+21 12 32.4	+ 7.35	21 3.4
7	3 53 57.97	9.666	16 51 30.9	31.24	20 51.1	7	6 8 28.62	11.764	21 15 14.1	6.12	21 4.1
8	3 57 51.05	9.756	17 3 57.6	30.97	20 51.1	8	6 13 11.48	11.804	21 17 26.1	4.87	21 4.9
9	4 1 46.28	9.845	17 16 17.4	30.66	20 51.1	9	6 17 55.27	11.842	21 19 7.9	3.60	21 5.7
10	4 5 43.62	9.932	17 28 29.1	30.31	20 51.2	10	6 22 39.95	11.878	21 20 19.1	2.32	21 6.5
11	4 9 43.04	+10.018	+17 40 31.8	+29.92	20 51.2	11	6 27 25.48	+11.912	+21 20 59.3	+ 1.02	21 7.3
12	4 13 44.53	10.103	17 52 24.5	29.48	20 51.3	12	6 32 11.82	11.945	21 21 8.1	- 0.29	21 8.1
13	4 17 48.05	10.187	18 4 6.3	29.00	20 51.4	13	6 36 58.91	11.976	21 20 45.2	1.62	21 8.9
14	4 21 53.56	10.270	18 15 36.2	28.48	20 51.6	14	6 41 46.71	12.004	21 19 50.3	2.96	21 9.8
15	4 26 1.04	10.351	18 26 53.2	27.92	20 51.8	15	6 46 35.17	12.030	21 18 23.1	4.31	21 10.7
16	4 30 10.45	+10.431	+18 37 56.3	+27.33	20 52.0	16	6 51 24.23	+12.054	+21 16 23.3	- 5.67	21 11.6
17	4 34 21.76	10.509	18 48 44.7	26.70	20 52.3	17	6 56 13.85	12.076	21 13 50.7	7.04	21 12.5
18	4 38 34.94	10.586	18 59 17.5	26.03	20 52.6	18	7 1 3.97	12.096	21 10 45.1	8.42	21 13.4
19	4 42 49.95	10.662	19 9 33.8	25.32	20 53.0	19	7 5 54.56	12.115	21 7 6.3	9.81	21 14.3
20	4 47 6.75	10.736	19 19 32.6	24.58	20 53.3	20	7 10 45.57	12.131	21 2 54.1	11.20	21 15.2
21	4 51 25.31	+10.809	+19 29 13.2	+23.80	20 53.7	21	7 15 36.93	+12.145	+20 58 8.5	-12.60	21 16.1
22	4 55 45.59	10.879	19 38 34.7	22.99	20 54.1	22	7 20 28.59	12.157	20 52 49.4	14.00	21 17.0
23	5 0 7.54	10.947	19 47 36.3	22.14	20 54.5	23	7 25 20.49	12.166	20 46 56.7	15.40	21 17.9
24	5 4 31.13	11.014	19 56 17.3	21.27	20 55.0	24	7 30 12.59	12.173	20 40 30.5	16.79	21 18.9
25	5 8 56.32	11.079	20 4 36.9	20.36	20 55.5	25	7 35 4.83	12.178	20 33 30.6	18.19	21 19.8
26	5 13 23.05	+11.143	+20 12 34.2	+19.42	20 56.0	26	7 39 57.18	+12.181	+20 25 57.2	-19.59	21 20.7
27	5 17 51.28	11.205	20 20 8.7	18.45	20 56.6	27	7 44 49.58	12.183	20 17 50.3	20.98	21 21.6
28	5 22 20.98	11.265	20 27 19.5	17.45	20 57.2	28	7 49 42.00	12.182	20 9 10.1	22.37	21 22.6
29	5 26 52.09	11.323	20 34 6.1	16.43	20 57.8	29	7 54 34.37	12.179	19 59 56.5	23.76	21 23.6
30	5 31 24.57	11.379	20 40 27.8	15.38	20 58.4	30	7 59 26.66	12.174	19 50 9.8	25.14	21 24.5
31	5 35 58.39	+11.434	+20 46 23.9	+14.30	20 59.1	31	8 4 18.82	+12.168	+19 39 50.1	-26.51	21 25.5
32	5 40 33.49	+11.487	+20 51 53.9	+13.20	20 59.8	32	8 9 10.83	+12.161	+19 28 57.7	-27.87	21 26.4
Day of the Month.						Day of the Month.					
5th. 10th. 15th. 20th. 25th. 30th.						4th. 9th. 14th. 19th. 24th. 29th.					
Semidiameter . . . 12.4 11.7 11.1 10.6 10.1 9.6						Semidiameter . . . 9.2 8.9 8.6 8.3 8.0 7.7					
Hor. Parallax . . . 12.9 12.2 11.5 11.0 10.5 10.0						Hor. Parallax . . . 9.6 9.2 8.9 8.6 8.3 8.0					

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign - indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.						OCTOBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	8 9 10.83	+12.161	+19 28 57.7	-27.87	21 26.4	1	10 31 59.50	+11.576	+10 16 7.1	-61.30	21 50.7
2	8 14 2.63	12.152	19 17 32.6	29.23	21 27.3	2	10 36 37.07	11.555	9 51 26.8	62.06	21 51.4
3	8 18 54.19	12.142	19 5 35.1	30.57	21 28.2	3	10 41 14.17	11.536	9 26 28.5	62.79	21 52.1
4	8 23 45.48	12.130	18 53 5.5	31.90	21 29.1	4	10 45 50.80	11.517	9 1 12.9	63.50	21 52.8
5	8 28 36.48	12.117	18 40 4.1	33.22	21 30.0	5	10 50 26.99	11.499	8 35 40.6	64.18	21 53.4
6	8 33 27.16	+12.103	+18 26 31.0	-34.53	21 30.9	6	10 55 2.76	+11.482	+ 8 9 52.3	-64.84	21 54.1
7	8 38 17.48	12.088	18 12 26.6	35.83	21 31.8	7	10 59 38.12	11.466	7 43 48.5	65.47	21 54.7
8	8 43 7.43	12.072	17 57 51.2	37.12	21 32.7	8	11 4 13.10	11.451	7 17 30.0	66.07	21 55.4
9	8 47 56.98	12.055	17 42 45.1	38.39	21 33.5	9	11 8 47.73	11.437	6 50 57.4	66.64	21 56.0
10	8 52 46.11	12.037	17 27 8.7	39.64	21 34.4	10	11 13 22.04	11.425	6 24 11.4	67.19	21 56.6
11	8 57 34.80	+12.018	+17 11 2.4	-40.88	21 35.3	11	11 17 56.06	+11.413	+ 5 57 12.5	-67.71	21 57.2
12	9 2 23.04	11.999	16 54 26.4	42.11	21 36.2	12	11 22 29.83	11.402	5 30 1.5	68.20	21 57.8
13	9 7 10.81	11.979	16 37 21.3	43.32	21 37.0	13	11 27 3.35	11.393	5 2 39.1	68.66	21 58.4
14	9 11 58.09	11.959	16 19 47.3	44.51	21 37.9	14	11 31 36.66	11.385	4 35 5.9	69.09	21 59.0
15	9 16 44.87	11.938	16 1 45.0	45.68	21 38.7	15	11 36 9.79	11.376	4 7 22.6	69.50	21 59.6
16	9 21 31.13	+11.916	+15 43 14.8	-46.82	21 39.5	16	11 40 42.78	+11.372	+ 3 39 29.9	-69.88	22 0.2
17	9 26 16.87	11.894	15 24 17.4	47.95	21 40.3	17	11 45 15.66	11.368	3 11 28.5	70.23	22 0.8
18	9 31 2.08	11.872	15 4 53.1	49.06	21 41.1	18	11 49 48.45	11.366	2 43 19.1	70.54	22 1.4
19	9 35 46.75	11.849	14 45 2.6	50.15	21 42.0	19	11 54 21.19	11.365	2 15 2.6	70.82	22 2.1
20	9 40 30.87	11.826	14 24 46.2	51.22	21 42.8	20	11 58 53.90	11.365	1 46 39.5	71.03	22 2.7
21	9 45 14.44	+11.804	+14 4 4.5	-52.26	21 43.6	21	12 3 26.62	+11.366	+ 1 18 10.7	-71.31	22 3.3
22	9 49 57.44	11.781	13 42 58.0	53.28	21 44.4	22	12 7 59.37	11.368	0 49 36.9	71.50	22 3.9
23	9 54 39.88	11.757	13 21 27.5	54.27	21 45.1	23	12 12 32.20	11.371	+ 0 20 58.7	71.67	22 4.5
24	9 59 21.75	11.734	12 59 33.5	55.24	21 45.8	24	12 17 5.13	11.376	- 0 7 43.0	71.81	22 5.1
25	10 4 3.07	11.710	12 37 16.5	56.18	21 46.5	25	12 21 38.21	11.383	0 36 27.6	71.91	22 5.7
26	10 8 43.83	+11.687	+12 14 37.1	-57.10	21 47.2	26	12 26 11.45	+11.390	- 1 5 14.2	-71.98	22 6.3
27	10 13 24.04	11.664	11 51 36.0	57.99	21 47.9	27	12 30 44.89	11.399	1 34 2.2	72.02	22 6.9
28	10 18 3.70	11.641	11 28 13.9	58.86	21 48.6	28	12 35 18.57	11.409	2 2 50.8	72.03	22 7.5
29	10 22 42.83	11.619	11 4 31.3	59.70	21 49.3	29	12 39 52.51	11.421	2 31 39.1	72.00	22 8.1
30	10 27 21.42	11.597	10 40 28.8	60.51	21 50.0	30	12 44 26.76	11.435	3 0 26.6	71.94	22 8.7
31	10 31 59.50	+11.576	+10 16 7.1	-61.30	21 50.7	31	12 49 1.34	+11.450	- 3 29 12.4	-71.86	22 9.4
32	10 36 37.07	+11.555	+ 9 51 26.8	-62.06	21 51.4	32	12 53 36.31	+11.467	- 3 57 55.8	-71.76	22 10.0
Day of the Month.						Day of the Month.					
3d. 8th. 13th. 18th. 23d. 28th.						3d. 8th. 13th. 18th. 23d. 28th.					
Semidiameter . . . 7.5 7.3 7.1 6.9 6.7 6.6						Semidiameter . . . 6.4 6.3 6.2 6.1 6.0 5.9					
Hor. Parallax . . . 7.8 7.5 7.3 7.1 7.0 6.8						Hor. Parallax . . . 6.7 6.5 6.4 6.3 6.2 6.1					

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	12 53 36.31	+11.467	- 3 57 55.8	-71.76	22 10.0	1	15 16 50.05	+12.573	-16 57 41.6	-33.25	22 35.4
2	12 58 11.69	11.485	4 26 36.0	71.61	22 10.7	2	15 21 52.37	12.622	17 18 46.0	52.12	22 36.6
3	13 2 47.52	11.504	4 55 12.4	71.43	22 11.4	3	15 26 55.87	12.671	17 39 23.0	50.96	22 37.7
4	13 7 23.83	11.525	5 23 44.1	71.22	22 12.1	4	15 32 0.57	12.721	17 59 31.6	49.76	22 38.9
5	13 12 0.67	11.548	5 52 10.5	70.98	22 12.8	5	15 37 6.47	12.770	18 19 11.2	48.53	22 40.1
6	13 16 38.07	+11.572	- 6 20 30.8	-70.71	22 13.4	6	15 42 13.54	+12.819	-18 38 21.0	-47.28	22 41.3
7	13 21 16.07	11.598	6 48 44.2	70.41	22 14.1	7	15 47 21.79	12.869	18 57 0.2	45.99	22 42.5
8	13 25 54.70	11.625	7 16 49.9	70.07	22 14.8	8	15 52 31.23	12.918	19 15 8.2	44.67	22 43.7
9	13 30 34.00	11.654	7 44 47.2	69.70	22 15.5	9	15 57 41.83	12.966	19 32 44.2	43.32	22 44.9
10	13 35 14.01	11.684	8 12 35.4	69.30	22 16.3	10	16 2 53.59	13.014	19 49 47.6	41.94	22 46.2
11	13 39 54.76	+11.716	- 8 40 13.6	-68.87	22 17.1	11	16 8 6.49	+13.061	-20 6 17.5	-40.54	22 47.5
12	13 44 36.29	11.749	9 7 41.1	68.41	22 17.9	12	16 13 20.53	13.108	20 22 13.4	39.11	22 48.8
13	13 49 18.64	11.783	9 34 57.1	67.92	22 18.7	13	16 18 35.67	13.154	20 37 34.5	37.65	22 50.1
14	13 54 1.83	11.819	10 2 0.8	67.39	22 19.4	14	16 23 51.90	13.198	20 52 20.2	36.16	22 51.5
15	13 58 45.90	11.856	10 28 51.5	66.83	22 20.2	15	16 29 9.19	13.242	21 6 29.9	34.64	22 52.8
16	14 3 30.87	+11.894	-10 55 28.3	-66.23	22 21.0	16	16 34 27.52	+13.284	-21 20 2.8	-33.10	22 54.2
17	14 8 16.77	11.933	11 21 50.4	65.60	22 21.8	17	16 39 46.84	13.325	21 32 58.5	31.53	22 55.6
18	14 13 3.64	11.974	11 47 57.0	64.94	22 22.7	18	16 45 7.13	13.364	21 45 16.2	29.94	22 57.0
19	14 17 51.51	12.016	12 13 47.2	64.25	22 23.6	19	16 50 28.34	13.402	21 56 55.4	28.32	22 58.4
20	14 22 40.38	12.059	12 39 20.4	63.52	22 24.5	20	16 55 50.44	13.438	22 7 55.7	26.69	22 59.9
21	14 27 30.28	+12.103	-13 4 35.6	-62.75	22 25.4	21	17 1 13.39	+13.473	-22 18 16.5	-25.03	23 1.3
22	14 32 21.24	12.147	13 29 32.0	61.95	22 26.3	22	17 6 37.14	13.504	22 27 57.4	23.35	23 2.8
23	14 37 13.28	12.192	13 54 8.9	61.12	22 27.2	23	17 12 1.64	13.534	22 36 57.9	21.66	23 4.3
24	14 42 6.41	12.237	14 18 25.3	60.25	22 28.2	24	17 17 26.84	13.562	22 45 17.4	19.95	23 5.8
25	14 47 0.65	12.283	14 42 20.5	59.35	22 29.2	25	17 22 52.69	13.588	22 52 55.5	18.22	23 7.3
26	14 51 56.00	+12.330	-15 5 53.8	-58.42	22 30.2	26	17 28 19.14	+13.611	-22 59 51.9	-16.48	23 8.8
27	14 56 52.49	12.376	15 29 4.2	57.45	22 31.2	27	17 33 46.11	13.632	23 6 6.3	14.73	23 10.3
28	15 1 50.13	12.426	15 51 51.0	56.45	22 32.2	28	17 39 13.55	13.651	23 11 38.5	12.96	23 11.8
29	15 6 48.94	12.475	16 14 13.3	55.42	22 33.2	29	17 44 41.41	13.667	23 16 28.1	11.18	23 13.3
30	15 11 48.91	12.524	16 36 10.4	54.35	22 34.3	30	17 50 9.64	13.681	23 20 34.9	9.39	23 14.9
31	15 16 50.05	+12.573	-16 57 41.6	-53.25	22 35.4	31	17 55 38.18	+13.692	-23 23 58.6	-7.59	23 16.4
32	15 21 52.37	+12.622	-17 18 46.0	-52.12	22 36.6	32	18 1 6.96	+13.701	-23 26 39.0	-5.78	23 18.0
Day of the Month.						Day of the Month.					
2d. 7th. 12th. 17th. 22d. 27th.						2d. 7th. 12th. 17th. 22d. 27th.					
Semidiameter . . . 5.8 5.7 5.6 5.6 5.5 5.4						Semidiameter . . . 5.4 5.3 5.3 5.2 5.2 5.2 5.1					
Hor. Parallax . . . 6.0 5.9 5.8 5.7 5.7 5.6						Hor. Parallax . . . 5.6 5.5 5.5 5.4 5.4 5.3 5.3					

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign - indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

GREENWICH MEAN TIME.													
JANUARY.						FEBRUARY.							
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.		
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.			
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m		
1	4 44 47.84	-2.212	+25 22 37.4	-3.04	9 57.2	1	4 45 8.31	+2.010	+25 12 44.9	+1.72	7 56.3		
2	4 43 56.52	2.063	25 21 25.1	2.98	9 52.4	2	4 45 57.83	2.116	25 13 27.7	1.84	7 53.2		
3	4 43 8.81	1.912	25 20 14.4	2.90	9 47.7	3	4 46 49.87	2.220	25 14 13.3	1.95	7 50.1		
4	4 42 24.74	1.760	25 19 5.8	2.81	9 43.1	4	4 47 44.37	2.322	25 15 1.6	2.05	7 47.1		
5	4 41 44.31	1.607	25 17 59.5	2.71	9 38.5	5	4 48 41.29	2.422	25 15 52.3	2.15	7 44.2		
6	4 41 7.55	-1.454	+25 16 55.9	-2.59	9 34.0	6	4 49 40.58	+2.529	+25 16 45.1	+2.24	7 41.2		
7	4 40 34.47	1.302	25 15 55.3	2.46	9 29.6	7	4 50 42.18	2.614	25 17 39.9	2.32	7 38.3		
8	4 40 5.06	1.150	25 14 57.9	2.32	9 25.2	8	4 51 46.04	2.707	25 18 36.5	2.39	7 35.5		
9	4 39 39.30	0.999	25 14 4.1	2.17	9 20.9	9	4 52 52.10	2.798	25 19 34.7	2.45	7 32.6		
10	4 39 17.20	0.848	25 13 14.1	2.01	9 16.6	10	4 54 0.31	2.886	25 20 34.3	2.50	7 29.8		
11	4 38 58.71	-0.697	+25 12 28.0	-1.84	9 12.3	11	4 55 10.62	+2.972	+25 21 35.0	+2.55	7 27.1		
12	4 38 43.81	0.547	25 11 45.9	1.66	9 8.2	12	4 56 22.98	3.056	25 22 36.6	2.59	7 24.4		
13	4 38 32.47	0.399	25 11 8.1	1.48	9 4.1	13	4 57 37.33	3.138	25 23 38.9	2.62	7 21.7		
14	4 38 24.65	0.253	25 10 34.7	1.30	9 0.0	14	4 58 53.61	3.218	25 24 41.6	2.64	7 19.0		
15	4 38 20.29	-0.109	25 10 5.6	1.12	8 56.1	15	5 0 11.78	3.296	25 25 44.6	2.64	7 16.4		
16	4 38 19.36	+0.032	+25 9 40.9	-0.94	8 52.1	16	5 1 31.80	+3.372	+25 26 47.8	+2.63	7 13.8		
17	4 38 21.80	0.171	25 9 20.6	0.75	8 48.3	17	5 2 53.63	3.446	25 27 50.8	2.62	7 11.2		
18	4 38 27.56	0.308	25 9 4.9	0.56	8 44.5	18	5 4 17.21	3.519	25 28 53.4	2.60	7 8.7		
19	4 38 36.58	0.443	25 8 53.7	0.37	8 40.7	19	5 5 42.50	3.590	25 29 55.6	2.57	7 6.2		
20	4 38 48.82	0.576	25 8 46.9	0.29	8 37.0	20	5 7 9.48	3.659	25 30 57.0	2.53	7 3.7		
21	4 39 4.22	+0.707	+25 8 44.4	-0.01	8 33.3	21	5 8 38.10	+3.726	+25 31 57.4	+2.49	7 1.3		
22	4 39 22.74	0.836	25 8 46.4	+0.17	8 29.7	22	5 10 8.32	3.791	25 32 56.6	2.44	6 58.9		
23	4 39 44.33	0.963	25 8 52.6	0.34	8 26.1	23	5 11 40.11	3.855	25 33 54.6	2.38	6 56.5		
24	4 40 8.93	1.088	25 9 3.1	0.51	8 22.6	24	5 13 13.44	3.918	25 34 51.0	2.31	6 54.1		
25	4 40 36.49	1.210	25 9 17.7	0.68	8 19.2	25	5 14 48.27	3.981	25 35 45.7	2.24	6 51.7		
26	4 41 6.97	+1.330	+25 9 36.4	+0.85	8 15.8	26	5 16 24.58	+4.043	+25 36 38.5	+2.16	6 49.4		
27	4 41 40.31	1.448	25 9 58.9	1.01	8 12.4	27	5 18 2.34	4.104	25 37 29.2	2.07	6 47.1		
28	4 42 16.48	1.564	25 10 25.1	1.16	8 9.1	28	5 19 41.52	4.163	25 38 17.6	1.97	6 44.8		
29	4 42 55.42	1.678	25 10 55.0	1.31	8 5.8	29	5 21 22.08	4.220	25 39 3.5	1.86	6 42.5		
30	4 43 37.06	1.790	25 11 28.3	1.45	8 2.6	30	5 23 4.00	4.275	25 39 46.7	1.75	6 40.3		
31	4 44 21.37	+1.901	+25 12 5.0	+1.59	7 59.4	31	5 24 47.23	+4.328	+25 40 27.1	+1.63	6 38.1		
32	4 45 8.31	+2.010	+25 12 44.9	+1.72	7 56.3	32	5 26 31.76	+4.380	+25 41 4.4	+1.50	6 35.9		
Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.	Day of the Month.	5th.	10th.	15th.	20th.	25th.
Semidiameter .	7.9	7.5	7.2	6.8	6.5	6.2	5.9	Semidiameter .	5.6	5.3	5.0	4.8	4.6
Hor. Parallax .	13.9	13.2	12.6	12.0	11.4	10.8	10.3	Hor. Parallax .	9.8	9.3	8.8	8.4	8.0

NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.

NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.

GREENWICH MEAN TIME.

GREENWICH MEAN TIME.												
MARCH.						APRIL.						
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.		
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m	
1	5 21 22.08	+4.220	+25 39 3.5	+1.86	6 42.5	1	6 22 5.60	+5.411	+25 27 41.7	-4.57	5 41.2	
2	5 23 4.00	4.275	25 39 46.7	1.75	6 40.3	2	6 24 15.78	5.436	25 25 48.6	4.85	5 39.5	
3	5 24 47.23	4.328	25 40 27.1	1.63	6 38.1	3	6 26 26.53	5.460	25 23 48.7	5.24	5 37.7	
4	5 26 31.76	4.380	25 41 4.4	1.50	6 35.9	4	6 28 37.84	5.485	25 21 41.8	5.43	5 36.0	
5	5 28 17.56	4.432	25 41 38.6	1.36	6 33.7	5	6 30 49.69	5.505	25 19 27.9	5.78	5 34.2	
6	5 30 4.59	+4.483	+25 42 9.4	+1.21	6 31.6	6	6 33 2.06	+5.526	+25 17 6.9	-6.02	5 32.5	
7	5 31 52.82	4.533	25 42 36.6	1.06	6 29.5	7	6 35 14.92	5.546	25 14 38.8	6.32	5 30.8	
8	5 33 42.22	4.582	25 43 0.1	0.90	6 27.3	8	6 37 28.26	5.565	25 12 3.4	6.62	5 29.1	
9	5 35 32.76	4.630	25 43 19.7	0.73	6 25.2	9	6 39 42.06	5.584	25 9 20.8	6.92	5 27.4	
10	5 37 24.40	4.676	25 43 35.3	0.55	6 23.2	10	6 41 56.30	5.602	25 6 30.9	7.23	5 25.7	
11	5 39 17.11	+4.720	+25 43 46.7	+0.37	6 21.1	11	6 44 10.96	+5.619	+25 3 33.7	-7.54	5 24.0	
12	5 41 10.86	4.762	25 43 53.8	0.19	6 19.1	12	6 46 26.03	5.636	25 0 29.0	7.85	5 22.3	
13	5 43 5.62	4.802	25 43 56.4	+0.01	6 17.1	13	6 48 41.49	5.652	24 57 16.9	8.16	5 20.6	
14	5 45 1.36	4.841	25 43 54.3	-0.18	6 15.1	14	6 50 57.31	5.667	24 53 57.2	8.47	5 18.9	
15	5 46 58.06	4.880	25 43 47.5	0.38	6 13.1	15	6 53 13.48	5.681	24 50 30.0	8.78	5 17.2	
16	5 48 55.68	+4.918	+25 43 35.8	-0.59	6 11.1	16	6 55 29.99	+5.695	+24 46 55.2	-9.20	5 15.6	
17	5 50 54.21	4.956	25 43 18.9	0.80	6 9.1	17	6 57 46.83	5.708	24 43 12.8	9.48	5 13.9	
18	5 52 53.61	4.993	25 42 56.9	1.02	6 7.2	18	7 0 3.98	5.721	24 39 22.8	9.74	5 12.3	
19	5 54 53.86	5.029	25 42 29.7	1.25	6 5.3	19	7 2 21.43	5.733	24 35 25.1	10.06	5 10.6	
20	5 56 54.94	5.065	25 41 57.0	1.48	6 3.3	20	7 4 39.18	5.745	24 31 19.6	10.38	5 9.0	
21	5 58 56.83	+5.096	+25 41 18.7	-2.71	6 1.4	21	7 6 57.20	+5.756	+24 27 6.4	-10.71	5 7.3	
22	6 0 59.51	5.128	25 40 34.8	1.95	5 59.5	22	7 9 15.49	5.767	24 22 45.4	11.04	5 5.7	
23	6 3 2.95	5.159	25 39 45.2	2.19	5 57.6	23	7 11 34.03	5.778	24 18 16.6	11.36	5 4.0	
24	6 5 7.13	5.190	25 38 49.8	2.44	5 55.8	24	7 13 52.83	5.788	24 13 39.9	11.69	5 2.4	
25	6 7 12.05	5.220	25 37 48.4	2.69	5 53.9	25	7 16 11.87	5.798	24 8 55.3	12.02	5 0.8	
26	6 9 17.69	+5.249	+25 36 40.8	-2.95	5 52.1	26	7 18 31.14	+5.808	+24 4 2.8	-12.35	4 59.2	
27	6 11 24.02	5.278	25 35 27.0	3.21	5 50.3	27	7 20 50.64	5.817	23 59 2.4	12.68	4 57.6	
28	6 13 31.04	5.306	25 34 6.9	3.47	5 48.4	28	7 23 10.35	5.826	23 53 54.0	13.01	4 56.0	
29	6 15 38.73	5.333	25 32 40.4	3.74	5 46.6	29	7 25 30.26	5.834	23 48 37.7	13.34	4 54.4	
30	6 17 47.06	5.359	25 31 7.5	4.01	5 44.8	30	7 27 50.36	5.841	23 43 13.4	13.67	4 52.8	
31	6 19 56.02	+5.385	+25 29 28.0	-4.29	5 43.0	31	7 30 10.63	+5.848	+23 37 41.1	-14.01	4 51.2	
32	6 22 5.60	+5.411	+25 27 41.7	-4.57	5 41.2	32	7 32 31.08	+5.855	+23 32 0.8	-14.35	4 49.6	
Day of the Month.						Day of the Month.						
2d. 7th. 12th. 17th. 22d. 27th.						1st. 6th. 11th. 16th. 21st. 26th.						
Semidiameter . . . 4.4 4.2 4.1 3.9 3.8 3.6						Semidiameter . . . 3.5 3.4 3.3 3.2 3.1 3.0						
Hor. Parallax . . . 7.7 7.4 7.1 6.8 6.6 6.3						Hor. Parallax . . . 6.1 5.9 5.7 5.5 5.4 5.2						
The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign - indicates that north declinations are decreasing and south declinations increasing.												

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign - indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	7 30 10.63	+5.848	+23 37 41.1	-14.01	4 51.2	1	8 43 15.36	+5.896	+19 41 15.9	-23.94	4 2.0
2	7 32 31.08	5.855	23 32 0.8	14.35	4 49.6	2	8 45 36.83	5.894	19 31 37.2	24.24	4 0.4
3	7 34 51.68	5.861	23 26 12.4	14.69	4 48.0	3	8 47 58.24	5.892	19 21 51.4	24.54	3 58.8
4	7 37 12.43	5.867	23 20 16.1	15.02	4 46.4	4	8 50 19.60	5.889	19 11 58.5	24.84	3 57.2
5	7 39 33.32	5.872	23 14 11.8	15.35	4 44.8	5	8 52 40.90	5.886	19 1 58.5	25.14	3 55.7
6	7 41 54.33	+5.877	+23 7 59.6	-15.68	4 43.2	6	8 55 2.13	+5.883	+18 51 51.7	-25.43	3 54.1
7	7 44 15.45	5.882	23 1 39.4	16.01	4 41.6	7	8 57 23.30	5.880	18 41 37.8	25.72	3 52.5
8	7 46 36.67	5.886	22 55 11.3	16.34	4 40.0	8	8 59 44.40	5.877	18 31 17.1	26.00	3 50.9
9	7 48 57.98	5.890	22 48 35.2	16.67	4 38.4	9	9 2 5.42	5.874	18 20 49.6	26.28	3 49.3
10	7 51 19.37	5.893	22 41 51.3	17.00	4 36.8	10	9 4 26.35	5.871	18 10 15.3	26.56	3 47.8
11	7 53 40.82	+5.895	+22 34 59.5	-17.33	4 35.3	11	9 6 47.20	+5.867	+17 59 34.4	-26.84	3 46.2
12	7 56 2.33	5.897	22 27 59.9	17.65	4 33.7	12	9 9 7.97	5.864	17 48 46.8	27.11	3 44.6
13	7 58 23.89	5.899	22 20 52.4	17.98	4 32.1	13	9 11 28.65	5.860	17 37 52.7	27.38	3 43.0
14	8 0 45.49	5.901	22 13 37.1	18.30	4 30.5	14	9 13 49.25	5.856	17 26 52.1	27.65	3 41.4
15	8 3 7.12	5.902	22 6 14.1	18.62	4 28.9	15	9 16 9.75	5.852	17 15 45.1	27.92	3 39.8
16	8 5 28.78	+5.903	+21 58 43.4	-18.94	4 27.4	16	9 18 30.16	+5.849	+17 4 31.6	-28.19	3 38.2
17	8 7 50.46	5.904	21 51 4.9	19.26	4 25.8	17	9 20 50.50	5.845	16 53 11.8	28.45	3 36.6
18	8 10 12.16	5.904	21 43 18.7	19.58	4 24.2	18	9 23 10.75	5.842	16 41 45.6	28.71	3 35.0
19	8 12 33.86	5.905	21 35 24.8	19.90	4 22.6	19	9 25 30.91	5.838	16 30 13.2	28.97	3 33.4
20	8 14 55.57	5.905	21 27 23.3	20.22	4 21.0	20	9 27 50.99	5.835	16 18 34.5	29.23	3 31.8
21	8 17 17.28	+5.905	+21 19 14.1	-20.54	4 19.5	21	9 30 10.99	+5.832	+16 6 49.8	-29.49	3 30.2
22	8 19 38.99	5.905	21 10 57.3	20.86	4 17.9	22	9 32 30.91	5.828	15 54 58.9	29.74	3 28.6
23	8 22 0.70	5.904	21 2 32.8	21.18	4 16.3	23	9 34 50.75	5.825	15 43 1.9	29.99	3 27.0
24	8 24 22.40	5.904	20 54 0.8	21.50	4 14.7	24	9 37 10.52	5.822	15 30 58.9	30.24	3 25.4
25	8 26 44.10	5.903	20 45 21.2	21.81	4 13.1	25	9 39 30.21	5.819	15 18 49.9	30.49	3 23.7
26	8 29 5.78	+5.903	+20 36 34.1	-22.12	4 11.6	26	9 41 49.84	+5.816	+15 6 35.1	-30.74	3 22.1
27	8 31 27.44	5.902	20 27 39.6	22.43	4 10.0	27	9 44 9.39	5.813	14 54 14.5	30.98	3 20.5
28	8 33 49.08	5.901	20 18 37.6	22.74	4 8.4	28	9 46 28.87	5.810	14 41 48.1	31.22	3 18.9
29	8 36 10.70	5.900	20 9 28.2	23.04	4 6.8	29	9 48 48.27	5.807	14 29 16.0	31.45	3 17.3
30	8 38 32.29	5.899	20 0 11.4	23.34	4 5.2	30	9 51 7.60	5.804	14 16 38.3	31.68	3 15.6
31	8 40 53.84	+5.898	+19 50 47.3	-23.64	4 3.6	31	9 53 26.86	+5.801	+14 3 55.1	-31.91	3 14.0
32	8 43 15.36	+5.896	+19 41 15.9	-23.94	4 2.0	32	9 55 46.06	+5.798	+13 51 6.5	-32.13	3 12.4
Day of the Month.						Day of the Month.					
1st. 6th. 11th. 16th. 21st. 26th. 31st.						6th. 10th. 15th. 20th. 25th. 30th.					
Semidiameter . 2.9 2.8 2.8 2.7 2.7 2.6 2.6						Semidiameter . . . 2.5 2.5 2.4 2.4 2.3 2.3					
Hor. Parallax . 5.1 5.0 4.9 4.8 4.7 4.6 4.5						Hor. Parallax . . . 4.4 4.3 4.3 4.2 4.1 4.0					

NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.

GREENWICH MEAN TIME.

JULY.						AUGUST.							
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.		
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.			
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m		
1	9 53 26.86	+5.801	+14 3 55.1	-31.91	3 14.0	1	11 4 58.10	+5.760	+6 50 41.4	-37.47	2 23.4		
2	9 55 46.06	5.798	13 51 6.5	32.13	3 12.4	2	11 7 16.34	5.761	6 35 40.1	37.60	2 21.8		
3	9 58 5.18	5.795	13 38 12.4	32.35	3 10.8	3	11 9 34.61	5.762	6 20 35.8	37.73	2 20.1		
4	10 0 24.23	5.792	13 25 13.1	32.57	3 9.2	4	11 11 52.91	5.763	6 5 28.6	37.86	2 18.5		
5	10 2 43.20	5.789	13 12 8.6	32.79	3 7.5	5	11 14 11.25	5.765	5 50 18.5	37.98	2 16.9		
6	10 5 2.11	+5.786	+12 58 59.0	-33.01	3 5.8	6	11 16 29.64	+5.767	+5 35 5.6	-38.09	2 15.2		
7	10 7 20.95	5.783	12 45 44.3	33.22	3 4.2	7	11 18 48.08	5.769	5 19 50.1	38.20	2 13.5		
8	10 9 39.72	5.780	12 32 24.6	33.43	3 2.6	8	11 21 6.55	5.771	5 4 32.0	38.31	2 11.9		
9	10 11 58.41	5.777	12 19 0.1	33.63	3 1.0	9	11 23 25.07	5.773	4 49 11.4	38.41	2 10.3		
10	10 14 17.04	5.774	12 5 30.7	33.83	2 59.4	10	11 25 43.65	5.776	4 33 48.3	38.51	2 8.7		
11	10 16 35.60	+5.772	+11 51 56.6	-34.02	2 57.8	11	11 28 2.30	+5.779	+4 18 22.9	-38.60	2 7.1		
12	10 18 54.10	5.769	11 38 17.9	34.21	2 56.1	12	11 30 21.03	5.782	4 2 55.2	38.69	2 5.4		
13	10 21 12.54	5.767	11 24 34.5	34.40	2 54.5	13	11 32 39.84	5.785	3 47 25.2	38.78	2 3.8		
14	10 23 30.94	5.765	11 10 46.6	34.59	2 52.8	14	11 34 58.73	5.789	3 31 53.2	38.87	2 2.2		
15	10 25 49.28	5.763	10 56 54.2	34.78	2 51.2	15	11 37 17.71	5.793	3 16 19.1	38.96	2 0.6		
16	10 28 7.57	+5.761	+10 42 57.4	-34.96	2 49.6	16	11 39 36.80	+5.798	+3 0 43.0	-39.04	1 59.0		
17	10 30 25.82	5.760	10 28 56.2	35.14	2 47.9	17	11 41 55.99	5.803	2 45 4.9	39.12	1 57.3		
18	10 32 44.04	5.759	10 14 50.8	35.32	2 46.3	18	11 44 15.29	5.808	2 29 25.1	39.20	1 55.7		
19	10 35 2.22	5.758	10 0 41.1	35.50	2 44.6	19	11 46 34.72	5.813	2 13 43.5	39.27	1 54.1		
20	10 37 20.39	5.757	9 46 27.2	35.67	2 43.0	20	11 48 54.28	5.818	1 58 0.2	39.34	1 52.5		
21	10 39 38.53	+5.756	+ 9 32 9.2	-35.84	2 41.4	21	11 51 13.98	+5.824	+1 42 15.4	-39.40	1 50.9		
22	10 41 56.66	5.756	9 17 47.2	36.00	2 39.7	22	11 53 33.81	5.830	1 26 29.0	39.46	1 49.2		
23	10 44 14.78	5.756	9 3 21.2	36.16	2 38.1	23	11 55 53.80	5.836	1 10 41.2	39.52	1 47.6		
24	10 46 32.89	5.755	8 48 51.3	36.32	2 36.4	24	11 58 13.94	5.843	0 54 52.1	39.57	1 46.0		
25	10 48 51.00	5.755	8 34 17.6	36.48	2 34.8	25	12 0 34.25	5.850	0 39 1.8	39.62	1 44.4		
26	10 51 9.12	+5.755	+ 8 19 40.1	-36.64	2 33.2	26	12 2 54.72	+5.857	+0 23 10.4	-39.66	1 42.8		
27	10 53 27.24	5.756	8 4 59.0	36.79	2 31.5	27	12 5 15.37	5.864	+0 7 17.9	39.70	1 41.2		
28	10 55 45.38	5.756	7 50 14.3	36.94	2 29.9	28	12 7 36.18	5.871	-0 8 35.5	39.74	1 39.6		
29	10 58 3.52	5.757	7 35 26.1	37.08	2 28.3	29	12 9 57.19	5.878	0 24 29.7	39.77	1 38.0		
30	11 0 21.68	5.758	7 20 34.5	37.21	2 26.7	30	12 12 18.37	5.886	0 40 24.6	39.80	1 36.4		
31	11 2 39.88	+5.759	+ 7 5 39.6	-37.34	2 25.1	31	12 14 39.75	+5.894	-0 56 20.1	-39.82	1 34.8		
32	11 4 58.10	+5.760	+ 6 50 41.4	-37.47	2 23.4	32	12 17 1.33	+5.903	-1 12 16.2	-39.84	1 33.2		
Day of the Month.						Day of the Month.							
	8th.	10th.	15th.	20th.	25th.	30th.		4th.	9th.	14th.	19th.	24th.	29th.
Semidiameter . . .	2.3	2.2	2.2	2.2	2.2	2.2	Semidiameter . . .	2.1	2.1	2.1	2.1	2.1	2.1
Hor. Parallax . . .	4.0	3.9	3.9	3.8	3.8	3.7	Hor. Parallax . . .	3.7	3.7	3.6	3.6	3.6	3.6

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign - indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

GREENWICH MEAN TIME.											
SEPTEMBER.						OCTOBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	12 17 1.33	+5.903	-1 12 16.2	-39.84	1 33.2	1	13 29 53.08	+6.285	-9 5 44.5	-38.40	0 47.9
2	12 19 23.11	5.912	1 28 12.6	39.85	1 31.6	2	13 32 24.12	6.302	9 21 4.4	38.27	0 46.5
3	12 21 45.09	5.921	1 44 9.3	39.86	1 30.1	3	13 34 55.56	6.319	9 36 21.3	38.14	0 45.1
4	12 24 7.30	5.930	2 0 6.2	39.87	1 28.5	4	13 37 27.43	6.336	9 51 35.0	38.00	0 43.7
5	12 26 29.71	5.939	2 16 3.0	39.87	1 27.0	5	13 39 59.71	6.354	10 6 45.4	37.86	0 42.3
6	12 28 52.35	+5.948	-2 31 59.9	-39.86	1 25.4	6	13 42 32.42	+6.372	-10 21 52.3	-37.72	0 40.9
7	12 31 15.22	5.958	2 47 56.8	39.86	1 23.9	7	13 45 5.56	6.390	10 36 55.8	37.57	0 39.5
8	12 33 38.33	5.968	3 3 53.5	39.85	1 22.3	8	13 47 39.14	6.408	10 51 55.6	37.41	0 38.1
9	12 36 1.68	5.978	3 19 49.8	39.84	1 20.8	9	13 50 13.16	6.427	11 6 51.5	37.25	0 36.7
10	12 38 25.29	5.989	3 35 45.6	39.83	1 19.2	10	13 52 47.64	6.446	11 21 43.5	37.08	0 35.3
11	12 40 49.15	+6.000	-3 51 40.9	-39.81	1 17.7	11	13 55 22.58	+6.466	-11 36 31.5	-36.91	0 33.9
12	12 43 13.28	6.011	4 7 35.7	39.78	1 16.1	12	13 57 57.98	6.486	11 51 15.3	36.73	0 32.6
13	12 45 37.69	6.022	4 23 29.8	39.74	1 14.6	13	14 0 33.86	6.506	12 5 54.8	36.55	0 31.3
14	12 48 2.38	6.033	4 39 23.1	39.70	1 13.0	14	14 3 10.23	6.526	12 20 29.8	36.36	0 29.9
15	12 50 27.37	6.045	4 55 15.5	39.66	1 11.5	15	14 5 47.09	6.547	12 35 0.3	36.16	0 28.6
16	12 52 52.66	+6.058	-5 11 7.0	-39.62	1 10.0	16	14 8 24.45	+6.568	-12 49 26.1	-35.96	0 27.3
17	12 55 18.25	6.071	5 26 57.4	39.58	1 8.5	17	14 11 2.31	6.589	13 3 47.0	35.76	0 26.0
18	12 57 44.16	6.084	5 42 46.5	39.54	1 7.0	18	14 13 40.68	6.610	13 18 3.0	35.55	0 24.7
19	13 0 10.40	6.098	5 58 34.3	39.49	1 5.5	19	14 16 19.57	6.631	13 32 13.8	35.34	0 23.4
20	13 2 36.98	6.112	6 14 20.8	39.43	1 4.0	20	14 18 58.99	6.653	13 46 19.4	35.12	0 22.1
21	13 5 3.90	+6.127	-6 30 5.8	-39.36	1 2.5	21	14 21 38.93	+6.675	-14 0 19.5	-34.89	0 20.8
22	13 7 31.16	6.142	6 45 49.1	39.28	1 1.0	22	14 24 19.40	6.697	14 14 14.1	34.65	0 19.5
23	13 9 58.77	6.157	7 1 30.6	39.20	0 59.6	23	14 27 0.41	6.720	14 28 3.0	34.41	0 18.3
24	13 12 26.74	6.173	7 17 10.3	39.11	0 58.1	24	14 29 41.97	6.743	14 41 45.9	34.16	0 17.0
25	13 14 55.08	6.188	7 32 48.0	39.02	0 56.6	25	14 32 24.07	6.765	14 55 22.8	33.90	0 15.8
26	13 17 23.79	+6.204	-7 48 23.5	-38.93	0 55.1	26	14 35 6.72	+6.788	-15 8 53.5	-33.64	0 14.6
27	13 19 52.87	6.220	8 3 56.8	38.83	0 53.6	27	14 37 49.91	6.811	15 22 17.9	33.37	0 13.4
28	13 22 22.34	6.236	8 19 27.6	38.73	0 52.2	28	14 40 33.65	6.834	15 35 35.7	33.10	0 12.2
29	13 24 52.19	6.252	8 34 55.9	38.63	0 50.7	29	14 43 17.95	6.857	15 48 46.9	32.82	0 11.0
30	13 27 22.44	6.268	8 50 21.6	38.52	0 49.3	30	14 46 2.81	6.880	16 1 51.2	32.53	0 9.8
31	13 29 53.08	+6.285	-9 5 44.5	-38.40	0 47.9	31	14 48 48.23	+6.903	-16 14 48.6	-32.24	0 8.6
32	13 32 24.12	+6.302	-9 21 4.4	-38.27	0 46.5	32	14 51 34.21	+6.926	-16 27 38.8	-31.94	0 7.4
Day of the Month.						Day of the Month.					
Semidiameter . . .						Semidiameter . . .					
Hor. Parallax . . .						Hor. Parallax . . .					
2.0 2.0 2.0 2.0 2.0 2.0						2.0 2.0 2.0 2.0 2.0 2.0					
3.6 3.6 3.6 3.5 3.5 3.5						3.5 3.5 3.5 3.5 3.5 3.5					
NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.											

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	14 51 34.21	+6.926	-16 27 38.8	-31.94	0 7.4	1	16 19 4.90	+7.655	-21 44 29.7	-19.87	23 35.8
2	14 54 20.75	6.950	16 40 21.7	31.63	0 6.3	2	16 22 8.87	7.677	21 52 20.6	19.37	23 35.0
3	14 57 7.85	6.974	16 52 57.1	31.32	0 5.2	3	16 25 13.38	7.699	21 59 59.3	18.86	23 34.1
4	14 59 55.52	6.998	17 5 24.9	31.00	0 4.0	4	16 28 18.42	7.721	22 7 25.8	18.35	23 33.3
5	15 2 43.77	7.022	17 17 45.0	30.67	0 2.9	5	16 31 23.98	7.743	22 14 39.8	17.83	23 32.4
6	15 5 32.60	+7.046	-17 29 57.1	-30.34	0 1.7	6	16 34 30.06	+7.764	-22 21 41.2	-17.30	23 31.6
7	15 8 22.00	7.070	17 42 1.2	30.00	{ 0 0.6	7	16 37 36.65	7.785	22 28 29.9	16.76	23 30.7
8	15 11 11.98	7.095	17 53 57.0	29.65	23 58.4	8	16 40 43.75	7.806	22 35 5.7	16.22	23 29.9
9	15 14 2.54	7.119	18 5 44.5	29.29	23 57.3	9	16 43 51.36	7.827	22 41 28.5	15.67	23 29.1
10	15 16 53.69	7.143	18 17 23.5	28.93	23 56.2	10	16 46 59.46	7.848	22 47 38.2	15.12	23 28.3
11	15 19 45.44	+7.168	-18 28 53.8	-28.57	23 55.1	11	16 50 8.05	+7.868	-22 53 34.7	-14.57	23 27.5
12	15 22 37.78	7.192	18 40 15.2	28.20	23 54.1	12	16 53 17.12	7.888	22 59 17.8	14.01	23 26.7
13	15 25 30.71	7.217	18 51 27.7	27.83	23 53.0	13	16 56 26.67	7.908	23 4 47.3	13.45	23 26.0
14	15 28 24.24	7.242	19 2 31.0	27.45	23 52.0	14	16 59 36.69	7.927	23 10 3.2	12.88	23 25.2
15	15 31 18.38	7.267	19 13 25.0	27.06	23 51.0	15	17 2 47.16	7.946	23 15 5.3	12.30	23 24.5
16	15 34 13.11	+7.292	-19 24 9.5	-26.66	23 49.9	16	17 5 58.08	+7.964	-23 19 53.5	-11.72	23 23.7
17	15 37 8.45	7.318	19 34 44.4	26.25	23 48.9	17	17 9 9.43	7.982	23 24 27.7	11.13	23 23.0
18	15 40 4.39	7.343	19 45 9.5	25.84	23 47.9	18	17 12 21.20	7.999	23 28 47.8	10.54	23 22.2
19	15 43 0.93	7.368	19 55 24.6	25.42	23 46.9	19	17 15 33.39	8.016	23 32 53.6	9.94	23 21.5
20	15 45 58.06	7.393	20 5 29.6	24.99	23 45.9	20	17 18 46.00	8.032	23 36 45.1	9.34	23 20.7
21	15 48 55.79	+7.418	-20 15 24.3	-24.56	23 45.0	21	17 21 59.01	+8.048	-23 40 22.1	-8.74	23 20.0
22	15 51 54.12	7.443	20 25 8.6	24.12	23 44.1	22	17 25 12.38	8.064	23 43 44.5	8.14	23 19.3
23	15 54 53.03	7.467	20 34 42.2	23.68	23 43.1	23	17 28 26.11	8.079	23 46 52.3	7.53	23 18.6
24	15 57 52.53	7.491	20 44 5.1	23.23	23 42.2	24	17 31 40.19	8.093	23 49 45.4	6.91	23 17.9
25	16 0 52.60	7.515	20 53 17.0	22.77	23 41.2	25	17 34 54.60	8.107	23 52 23.6	6.29	23 17.2
26	16 3 53.25	+7.539	-21 2 17.8	-22.30	23 40.3	26	17 38 9.33	+8.120	-23 54 46.9	-5.66	23 16.5
27	16 6 54.47	7.563	21 11 7.3	21.83	23 39.4	27	17 41 24.37	8.132	23 56 55.2	5.03	23 15.8
28	16 9 56.25	7.586	21 19 45.4	21.35	23 38.5	28	17 44 39.70	8.144	23 58 48.4	4.40	23 15.1
29	16 12 58.58	7.609	21 28 11.9	20.86	23 37.6	29	17 47 55.30	8.155	24 0 26.5	3.77	23 14.4
30	16 16 1.47	7.632	21 36 26.7	20.37	23 36.7	30	17 51 11.16	8.166	24 1 49.3	3.14	23 13.8
31	16 19 4.90	+7.655	-21 44 29.7	-19.87	23 35.8	31	17 54 27.27	+8.176	-24 2 56.9	-2.50	23 13.1
32	16 22 8.87	+7.677	-21 52 20.6	-19.37	23 35.0	32	17 57 43.61	+8.185	-24 3 49.2	-1.86	23 12.4
Day of the Month.						Day of the Month.					
2d. 7th. 12th. 17th. 22d. 27th.						2d. 7th. 12th. 17th. 22d. 27th. 29d.					
Semidiameter . . . 2.0 2.0 2.0 2.0 2.0 2.0						Semidiameter . 2.0 2.0 2.0 2.1 2.1 2.1 2.1					
Hor. Parallax . . . 3.5 3.5 3.5 3.5 3.5 3.5						Hor. Parallax . 3.6 3.6 3.6 3.6 3.6 3.6 3.7					

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign - indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	10 48 25.39	-0.197	+8 50 17.1	+1.93	16 0.2	1	10 40 34.64	-1.011	+9 45 36.2	+6.55	13 50.3
2	10 48 20.30	0.227	8 51 5.6	2.11	15 56.1	2	10 40 10.14	1.030	9 48 14.9	6.65	13 46.0
3	10 48 14.49	0.257	8 51 58.4	2.29	15 52.1	3	10 39 45.19	1.048	9 50 55.8	6.74	13 41.6
4	10 48 7.95	0.287	8 52 55.5	2.47	15 48.1	4	10 39 19.82	1.065	9 53 38.6	6.82	13 37.3
5	10 48 0.69	0.318	8 53 57.0	2.65	15 44.0	5	10 38 54.05	1.082	9 56 23.3	6.90	13 32.9
6	10 47 52.70	-0.348	+8 55 2.8	+2.83	15 39.9	6	10 38 27.90	-1.097	+9 59 10.0	+6.97	13 28.5
7	10 47 44.00	0.378	8 56 12.8	3.01	15 35.8	7	10 38 1.37	1.112	10 1 58.3	7.04	13 24.1
8	10 47 34.59	0.407	8 57 27.0	3.18	15 31.7	8	10 37 34.50	1.126	10 4 48.2	7.11	13 19.8
9	10 47 24.48	0.436	8 58 45.3	3.35	15 27.6	9	10 37 7.30	1.139	10 7 39.6	7.17	13 15.4
10	10 47 13.66	0.465	9 0 7.8	3.52	15 23.5	10	10 36 39.79	1.152	10 10 32.4	7.22	13 11.0
11	10 47 2.16	-0.494	+9 1 34.3	+3.69	15 19.4	11	10 36 11.99	-1.164	+10 13 26.4	+7.27	13 6.6
12	10 46 49.97	0.523	9 3 4.7	3.85	15 15.2	12	10 35 43.92	1.175	10 16 21.3	7.31	13 2.3
13	10 46 37.09	0.551	9 4 39.1	4.01	15 11.1	13	10 35 15.60	1.185	10 19 17.2	7.35	12 57.8
14	10 46 23.54	0.579	9 6 17.4	4.17	15 6.9	14	10 34 47.05	1.194	10 22 14.0	7.38	12 53.4
15	10 46 9.33	0.606	9 7 59.5	4.33	15 2.7	15	10 34 18.29	1.202	10 25 11.5	7.40	12 49.0
16	10 45 54.46	-0.633	+9 9 45.4	+4.49	14 58.6	16	10 33 49.34	-1.209	+10 28 9.4	+7.42	12 44.5
17	10 45 38.94	0.660	9 11 35.1	4.64	14 54.4	17	10 33 20.22	1.216	10 31 7.8	7.44	12 40.1
18	10 45 22.77	0.687	9 13 28.4	4.79	14 50.1	18	10 32 50.95	1.222	10 34 6.7	7.45	12 35.7
19	10 45 5.97	0.713	9 15 25.2	4.94	14 45.9	19	10 32 21.55	1.227	10 37 5.7	7.45	12 31.3
20	10 44 48.55	0.739	9 17 25.5	5.09	14 41.7	20	10 31 52.04	1.231	10 40 4.7	7.44	12 26.9
21	10 44 30.52	-0.764	+9 19 29.4	+5.24	14 37.5	21	10 31 22.44	-1.234	+10 43 3.7	+7.44	12 22.4
22	10 44 11.87	0.789	9 21 36.8	5.38	14 33.2	22	10 30 52.78	1.237	10 46 2.6	7.44	12 18.0
23	10 43 52.63	0.814	9 23 47.3	5.51	14 29.0	23	10 30 23.06	1.239	10 49 1.2	7.43	12 13.6
24	10 43 32.81	0.838	9 26 1.0	5.64	14 24.7	24	10 29 53.32	1.239	10 51 59.2	7.41	12 9.1
25	10 43 12.41	0.861	9 28 17.8	5.77	14 20.4	25	10 29 23.58	1.238	10 54 56.7	7.39	12 4.7
26	10 42 51.44	-0.884	+9 30 37.8	+5.89	14 16.2	26	10 28 53.87	-1.237	+10 57 53.7	+7.36	12 0.3
27	10 42 29.93	0.907	9 33 0.7	6.01	14 11.9	27	10 28 24.20	1.235	11 0 49.8	7.32	11 55.9
28	10 42 7.89	0.929	9 35 26.4	6.13	14 7.6	28	10 27 54.58	1.232	11 3 44.8	7.28	11 51.5
29	10 41 45.33	0.951	9 37 55.0	6.24	14 3.3	29	10 27 25.04	1.229	11 6 38.7	7.23	11 47.0
30	10 41 22.25	0.972	9 40 26.3	6.35	13 58.9	30	10 26 55.61	1.224	11 9 31.6	7.17	11 42.6
31	10 40 58.68	-0.992	+9 43 0.0	+6.45	13 54.6	31	10 26 26.32	-1.218	+11 12 23.1	+7.11	11 38.2
32	10 40 34.64	-1.011	+9 45 36.2	+6.55	13 50.3	32	10 25 57.18	-1.211	+11 15 13.0	+7.05	11 33.8

Day of the Month.	1st.	9th.	17th.	25th.	Day of the Month.	2d.	10th.	18th.	26th.
Semidiameter	19.6	20.0	20.4	20.7	Semidiameter	21.0	21.2	21.3	21.3
Horizontal Parallax	1.8	1.9	1.9	2.0	Horizontal Parallax	2.0	2.0	2.0	2.0

NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.

GREENWICH MEAN TIME

MARCH.						APRIL.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	10 27 25.04	-1.229	+11 6 38.7	+7.23	11 47.0	1	10 14 40.61	-0.718	+12 17 51.9	+3.72	9 32.6
2	10 26 55.61	1.224	11 9 31.6	7.17	11 42.6	2	10 14 23.70	0.692	12 19 19.3	3.56	9 28.4
3	10 26 26.32	1.218	11 12 23.1	7.11	11 38.2	3	10 14 7.42	0.665	12 20 42.9	3.40	9 24.2
4	10 25 57.18	1.211	11 15 13.0	7.05	11 33.8	4	10 13 51.79	0.638	12 22 2.6	3.24	9 20.0
5	10 25 28.21	1.205	11 18 1.3	6.98	11 29.4	5	10 13 36.82	0.611	12 23 18.5	3.08	9 15.8
6	10 24 59.44	-1.194	+11 20 48.1	+6.91	11 25.0	6	10 13 22.50	-0.583	+12 24 30.5	+2.92	9 11.7
7	10 24 30.89	1.185	11 23 33.0	6.83	11 20.6	7	10 13 8.83	0.556	12 25 38.6	2.76	9 7.5
8	10 24 2.58	1.175	11 26 15.9	6.75	11 16.2	8	10 12 55.82	0.528	12 26 42.7	2.59	9 3.4
9	10 23 34.52	1.168	11 28 56.7	6.66	11 11.8	9	10 12 43.48	0.500	12 27 42.8	2.42	8 59.2
10	10 23 6.74	1.151	11 31 35.5	6.57	11 7.4	10	10 12 31.82	0.472	12 28 38.9	2.26	8 55.1
11	10 22 39.28	-1.138	+11 34 11.9	+6.47	11 3.0	11	10 12 20.84	-0.443	+12 29 31.1	+2.09	8 51.0
12	10 22 12.13	1.125	11 36 45.9	6.37	10 58.6	12	10 12 10.56	0.414	12 30 19.2	1.92	8 46.9
13	10 21 45.30	1.111	11 39 17.5	6.27	10 54.3	13	10 12 0.97	0.385	12 31 3.3	1.76	8 42.8
14	10 21 18.82	1.096	11 41 46.7	6.16	10 49.9	14	10 11 52.07	0.356	12 31 43.5	1.59	8 38.7
15	10 20 52.72	1.080	11 44 13.2	6.05	10 45.5	15	10 11 43.86	0.327	12 32 19.7	1.42	8 34.7
16	10 20 27.01	-1.063	+11 46 36.9	+5.93	10 41.2	16	10 11 36.35	-0.298	+12 32 51.8	+1.25	8 30.6
17	10 20 1.71	1.045	11 48 57.8	5.81	10 36.8	17	10 11 29.54	0.269	12 33 19.9	1.09	8 26.6
18	10 19 36.83	1.027	11 51 16.0	5.69	10 32.5	18	10 11 23.44	0.240	12 33 44.1	0.92	8 22.6
19	10 19 12.39	1.009	11 53 31.2	5.57	10 28.2	19	10 11 18.04	0.211	12 34 4.3	0.75	8 18.5
20	10 18 48.39	0.990	11 55 43.3	5.44	10 23.8	20	10 11 13.34	0.182	12 34 20.4	0.58	8 14.5
21	10 18 24.85	-0.970	+11 57 52.4	+5.31	10 19.5	21	10 11 9.35	-0.152	+12 34 32.5	+0.42	8 10.5
22	10 18 1.79	0.950	11 59 58.4	5.18	10 15.2	22	10 11 6.06	0.123	12 34 40.7	0.25	8 6.6
23	10 17 39.23	0.929	12 2 1.2	5.05	10 10.9	23	10 11 3.48	0.094	12 34 44.9	+0.09	8 2.6
24	10 17 17.18	0.908	12 4 0.7	4.91	10 6.6	24	10 11 1.60	0.064	12 34 45.1	-0.07	7 58.6
25	10 16 55.65	0.886	12 5 56.9	4.77	10 2.3	25	10 11 0.43	0.035	12 34 41.3	0.24	7 54.7
26	10 16 34.64	-0.863	+12 7 49.7	+4.63	9 58.0	26	10 10 59.97	-0.005	+12 34 33.5	-0.41	7 50.7
27	10 16 14.18	0.840	12 9 39.1	4.48	9 53.8	27	10 11 0.23	+0.025	12 34 21.8	0.57	7 46.8
28	10 15 54.30	0.816	12 11 24.9	4.33	9 49.5	28	10 11 1.18	0.055	12 34 6.0	0.74	7 42.9
29	10 15 35.00	0.792	12 13 7.1	4.18	9 45.3	29	10 11 2.84	0.085	12 33 46.3	0.91	7 39.0
30	10 15 16.26	0.768	12 14 45.7	4.03	9 41.0	30	10 11 5.21	0.114	12 33 22.7	1.07	7 35.1
31	10 14 58.13	-0.743	+12 16 20.7	+3.87	9 36.8	31	10 11 8.28	+0.143	+12 32 55.1	-1.24	7 31.2
32	10 14 40.61	-0.718	+12 17 51.9	+3.72	9 32.6	32	10 11 12.06	+0.172	+12 32 23.5	-1.40	7 27.4

Day of the Month.	6th.	14th.	22d.	30th.	Day of the Month.	7th.	15th.	23d.
Semidiameter	21.3	21.1	20.8	20.5	Semidiameter	20.1	19.7	19.2
Horizontal Parallax	2.0	2.0	2.0	1.9	Horizontal Parallax	1.9	1.9	1.8

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign - indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
Noon.	Noon.	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.	Noon.		
h m s	s	" ' "	"	h m		h m s	s	" ' "	"	h m	
1	10 11 8.28	+0.143	+12 32 55.1	-1.24	7 31.2	1	10 18 9.31	+0.954	+11 48 16.6	-5.80	5 36.4
2	10 11 12.06	0.172	12 32 23.5	1.40	7 27.4	2	10 18 32.47	0.976	11 45 55.9	5.93	5 32.9
3	10 11 16.53	0.201	12 31 48.0	1.56	7 23.5	3	10 18 56.17	0.998	11 43 32.1	6.06	5 29.3
4	10 11 21.69	0.230	12 31 8.7	1.72	7 19.7	4	10 19 20.39	1.020	11 41 5.3	6.18	5 25.8
5	10 11 27.55	0.259	12 30 25.5	1.88	7 15.8	5	10 19 45.14	1.042	11 38 35.5	6.30	5 22.3
6	10 11 34.10	+0.287	+12 29 38.5	-2.04	7 12.0	6	10 20 10.41	+1.063	+11 36 2.7	-6.43	5 18.8
7	10 11 41.33	0.316	12 28 47.7	2.20	7 8.2	7	10 20 36.18	1.084	11 33 26.9	6.55	5 15.3
8	10 11 49.24	0.344	12 27 53.1	2.36	7 4.4	8	10 21 2.44	1.104	11 30 48.2	6.67	5 11.8
9	10 11 57.84	0.372	12 26 54.6	2.52	7 0.6	9	10 21 29.19	1.125	11 28 6.7	6.79	5 8.3
10	10 12 7.10	0.400	12 25 52.4	2.67	6 56.9	10	10 21 56.44	1.145	11 25 22.3	6.91	5 4.8
11	10 12 17.02	+0.428	+12 24 46.6	-2.82	6 53.1	11	10 22 24.16	+1.165	+11 22 35.1	-7.03	5 1.3
12	10 12 27.60	0.455	12 23 37.1	2.97	6 49.3	12	10 22 52.35	1.184	11 19 45.1	7.15	4 57.9
13	10 12 38.85	0.482	12 22 23.9	3.12	6 45.6	13	10 23 21.00	1.203	11 16 52.3	7.26	4 54.4
14	10 12 50.74	0.509	12 21 7.1	3.27	6 41.9	14	10 23 50.11	1.222	11 13 56.8	7.37	4 51.0
15	10 13 3.27	0.536	12 19 46.7	3.42	6 38.1	15	10 24 19.67	1.241	11 10 58.5	7.48	4 47.5
16	10 13 16.43	+0.562	+12 18 22.8	-3.57	6 34.4	16	10 24 49.67	+1.259	+11 7 57.6	-7.59	4 44.1
17	10 13 30.23	0.588	12 16 55.4	3.72	6 30.7	17	10 25 20.11	1.277	11 4 54.1	7.70	4 40.7
18	10 13 44.66	0.614	12 15 24.5	3.86	6 27.1	18	10 25 50.99	1.295	11 1 48.1	7.81	4 37.3
19	10 13 59.70	0.640	12 13 50.1	4.01	6 23.4	19	10 26 22.30	1.313	10 58 39.3	7.92	4 33.9
20	10 14 15.35	0.665	12 12 12.2	4.15	6 19.7	20	10 26 54.02	1.330	10 55 28.0	8.03	4 30.5
21	10 14 31.62	+0.690	+12 10 30.9	-4.29	6 16.0	21	10 27 26.15	+1.347	+10 52 14.1	-8.14	4 27.1
22	10 14 48.50	0.715	12 8 46.2	4.43	6 12.4	22	10 27 58.69	1.364	10 48 57.7	8.24	4 23.7
23	10 15 5.97	0.740	12 6 58.1	4.57	6 8.7	23	10 28 31.64	1.381	10 45 38.7	8.34	4 20.3
24	10 15 24.03	0.764	12 5 6.6	4.71	6 5.1	24	10 29 4.98	1.398	10 42 17.3	8.45	4 16.9
25	10 15 42.68	0.789	12 3 11.8	4.85	6 1.5	25	10 29 38.72	1.414	10 38 53.5	8.55	4 13.5
26	10 16 1.93	+0.813	+12 1 13.7	-4.99	5 57.9	26	10 30 12.85	+1.430	+10 35 27.2	-8.65	4 10.1
27	10 16 21.75	0.837	11 59 12.3	5.13	5 54.3	27	10 30 47.36	1.446	10 31 58.5	8.75	4 6.7
28	10 16 42.14	0.861	11 57 7.6	5.27	5 50.7	28	10 31 22.24	1.461	10 28 27.5	8.85	4 3.4
29	10 17 3.10	0.885	11 54 59.6	5.40	5 47.1	29	10 31 57.49	1.476	10 24 54.2	8.94	4 0.0
30	10 17 24.62	0.908	11 52 48.4	5.53	5 43.5	30	10 32 33.11	1.491	10 21 18.5	9.04	3 56.7
31	10 17 46.69	+0.931	+11 50 34.1	-5.67	5 40.0	31	10 33 9.08	+1.506	+10 17 40.5	-9.13	3 53.3
32	10 18 9.31	+0.954	+11 48 16.6	-5.80	5 36.4	32	10 33 45.39	+1.520	+10 14 0.3	-9.22	3 50.0

Day of the Month.	1st.	9th.	17th.	25th.	Day of the Month.	2d.	10th.	18th.	26th.
Semidiameter	18.8	18.4	17.9	17.5	Semidiameter	17.1	16.7	16.4	16.1
Horizontal Parallax	1.8	1.7	1.7	1.6	Horizontal Parallax	1.6	1.6	1.5	1.5

NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.

GREENWICH MEAN TIME.

JULY.

AUGUST.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	10 33 9.08	+1.506	+10 17 40.5	-9.13	3 53.3	1	10 54 8.05	+1.844	+8 9 1.6	-11.44	2 12.4
2	10 33 45.39	1.520	10 14 0.3	9.22	3 50.0	2	10 54 52.39	1.851	8 4 26.4	11.50	2 9.2
3	10 34 22.04	1.535	10 10 17.9	9.31	3 46.7	3	10 55 36.90	1.858	7 59 49.9	11.55	2 6.0
4	10 34 59.03	1.549	10 6 33.4	9.40	3 43.4	4	10 56 21.58	1.865	7 55 12.1	11.60	2 2.8
5	10 35 36.36	1.563	10 2 46.7	9.49	3 40.1	5	10 57 6.43	1.872	7 50 33.1	11.65	1 59.7
6	10 36 14.03	+1.576	+9 58 57.9	-9.58	3 36.8	6	10 57 51.44	+1.879	+7 45 52.9	-11.70	1 56.5
7	10 36 52.00	1.589	9 55 7.0	9.67	3 33.5	7	10 58 36.59	1.885	7 41 11.5	11.75	1 53.3
8	10 37 30.27	1.602	9 51 14.1	9.75	3 30.2	8	10 59 21.90	1.891	7 36 28.9	11.80	1 50.1
9	10 38 8.85	1.614	9 47 19.2	9.83	3 26.9	9	11 0 7.36	1.897	7 31 45.1	11.85	1 46.9
10	10 38 47.72	1.626	9 43 22.3	9.91	3 23.6	10	11 0 52.96	1.903	7 27 0.2	11.89	1 43.7
11	10 39 26.89	+1.638	+9 39 23.4	-9.99	3 20.3	11	11 1 38.69	+1.909	+7 22 14.3	-11.94	1 40.5
12	10 40 6.35	1.650	9 35 22.6	10.07	3 17.1	12	11 2 24.56	1.914	7 17 27.4	11.98	1 37.4
13	10 40 46.09	1.662	9 31 19.8	10.15	3 13.8	13	11 3 10.56	1.919	7 12 39.5	12.02	1 34.2
14	10 41 26.10	1.673	9 27 15.2	10.23	3 10.6	14	11 3 56.68	1.924	7 7 50.5	12.06	1 31.1
15	10 42 6.38	1.684	9 23 8.8	10.31	3 7.3	15	11 4 42.92	1.929	7 3 0.6	12.10	1 27.9
16	10 42 46.93	+1.695	+9 19 0.7	-10.38	3 4.1	16	11 5 29.28	+1.934	+6 58 9.7	-12.14	1 24.8
17	10 43 27.74	1.706	9 14 50.7	10.45	3 0.8	17	11 6 15.77	1.939	6 53 17.9	12.18	1 21.6
18	10 44 8.80	1.717	9 10 39.0	10.53	2 57.5	18	11 7 2.36	1.944	6 48 25.1	12.22	1 18.5
19	10 44 50.12	1.727	9 6 25.4	10.60	2 54.2	19	11 7 49.05	1.948	6 43 31.5	12.25	1 15.3
20	10 45 31.69	1.737	9 2 10.1	10.67	2 51.0	20	11 8 35.84	1.952	6 38 37.1	12.29	1 12.2
21	10 46 13.50	+1.747	+8 57 53.1	-10.74	2 47.7	21	11 9 22.74	+1.956	+6 33 41.9	-12.32	1 9.0
22	10 46 55.55	1.757	8 53 34.5	10.81	2 44.5	22	11 10 9.73	1.960	6 28 45.8	12.35	1 5.9
23	10 47 37.83	1.766	8 49 14.2	10.88	2 41.3	23	11 10 56.81	1.964	6 23 49.0	12.38	1 2.7
24	10 48 20.34	1.776	8 44 52.3	10.95	2 38.1	24	11 11 43.97	1.967	6 18 51.5	12.41	0 59.6
25	10 49 3.09	1.785	8 40 28.7	11.02	2 34.8	25	11 12 31.21	1.970	6 13 53.3	12.44	0 56.4
26	10 49 46.04	+1.794	+8 36 3.6	-11.08	2 31.6	26	11 13 18.53	+1.973	+6 8 54.4	-12.47	0 53.3
27	10 50 29.20	1.803	8 31 37.0	11.14	2 28.4	27	11 14 5.92	1.976	6 3 54.9	12.50	0 50.1
28	10 51 12.57	1.812	8 27 8.8	11.21	2 25.2	28	11 14 53.38	1.979	5 58 54.8	12.52	0 47.0
29	10 51 56.15	1.820	8 22 39.1	11.27	2 22.0	29	11 15 40.90	1.981	5 53 54.1	12.54	0 43.8
30	10 52 39.92	1.828	8 18 8.0	11.33	2 18.8	30	11 16 28.48	1.983	5 48 52.9	12.56	0 40.6
31	10 53 23.89	+1.836	+8 13 35.5	-11.39	2 15.6	31	11 17 16.11	+1.985	+5 43 51.3	-12.58	0 37.5
32	10 54 8.05	+1.844	+8 9 1.6	-11.44	2 12.4	32	11 18 3.78	+1.987	+5 38 49.2	-12.60	0 34.4

Day of the Month.	4th.	19th.	20th.	28th.	Day of the Month.	5th.	18th.	21st.	29th.
Semidiameter	15.8	15.5	15.3	15.1	Semidiameter	15.0	14.8	14.7	14.6
Horizontal Parallax	1.5	1.5	1.4	1.4	Horizontal Parallax	1.4	1.4	1.4	1.4

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign - indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.						OCTOBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declinauon.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	11 18 3.78	+1.987	+5 38 49.2	-12.60	0 34.4	1	11 41 55.50	+1.964	+3 6 50.3	-12.53	22 57.0
2	11 18 51.50	1.989	5 33 46.7	12.62	0 31.2	2	11 42 42.57	1.960	3 1 49.9	12.51	22 53.9
3	11 19 39.26	1.991	5 28 43.9	12.63	0 28.1	3	11 43 29.56	1.956	2 56 50.1	12.48	22 50.7
4	11 20 27.05	1.992	5 23 40.7	12.65	0 25.0	4	11 44 16.46	1.952	2 51 50.8	12.45	22 47.6
5	11 21 14.87	1.993	5 18 37.1	12.66	0 21.9	5	11 45 3.25	1.948	2 46 52.3	12.42	22 44.4
6	11 22 2.71	+1.994	+5 13 33.2	-12.67	0 18.7	6	11 45 49.93	+1.943	+2 41 54.5	-12.39	22 41.2
7	11 22 50.57	1.995	5 8 29.1	12.68	0 15.6	7	11 46 36.51	1.939	2 36 57.5	12.36	22 38.0
8	11 23 38.44	1.995	5 3 24.8	12.68	0 12.4	8	11 47 22.98	1.934	2 32 1.2	12.33	22 34.9
9	11 24 26.34	1.996	4 58 20.3	12.69	0 9.3	9	11 48 9.33	1.929	2 27 5.7	12.29	22 31.7
10	11 25 14.25	1.996	4 53 15.5	12.70	0 6.1	10	11 48 55.55	1.924	2 22 11.1	12.26	22 28.6
11	11 26 2.16	+1.996	+4 48 10.6	-12.70	0 3.0	11	11 49 41.65	+1.919	+2 17 17.4	-12.22	22 25.4
12	11 26 50.07	1.996	4 43 5.6	12.71	23 56.7	12	11 50 27.63	1.913	2 12 24.5	12.18	22 22.3
13	11 27 37.98	1.996	4 38 0.6	12.71	23 53.6	13	11 51 13.47	1.907	2 7 32.5	12.14	22 19.1
14	11 28 25.88	1.995	4 32 55.5	12.72	23 50.5	14	11 51 59.17	1.901	2 2 41.5	12.10	22 15.9
15	11 29 13.78	1.995	4 27 50.3	12.72	23 47.3	15	11 52 44.73	1.895	1 57 51.6	12.06	22 12.7
16	11 30 1.66	+1.994	+4 22 45.1	-12.72	23 44.2	16	11 53 30.14	+1.889	+1 53 2.7	-12.02	22 9.6
17	11 30 49.52	1.994	4 17 40.0	12.71	23 41.0	17	11 54 15.40	1.883	1 48 14.8	11.97	22 6.4
18	11 31 37.37	1.993	4 12 34.9	12.71	23 37.9	18	11 55 0.50	1.876	1 43 28.1	11.92	22 3.2
19	11 32 25.20	1.992	4 7 29.8	12.70	23 34.7	19	11 55 45.44	1.869	1 38 42.5	11.87	22 0.0
20	11 33 12.99	1.991	4 2 24.9	12.70	23 31.6	20	11 56 30.23	1.862	1 33 58.1	11.82	21 56.8
21	11 34 0.75	+1.989	+3 57 20.2	-12.69	23 28.4	21	11 57 14.83	+1.855	+1 29 15.0	-11.77	21 53.6
22	11 34 48.48	1.987	3 52 15.8	12.68	23 25.3	22	11 57 59.25	1.847	1 24 33.2	11.72	21 50.4
23	11 35 36.17	1.985	3 47 11.5	12.67	23 22.2	23	11 58 43.48	1.839	1 19 52.7	11.66	21 47.2
24	11 36 23.80	1.983	3 42 7.5	12.66	23 19.1	24	11 59 27.52	1.831	1 15 13.5	11.60	21 44.0
25	11 37 11.38	1.981	3 37 3.8	12.65	23 15.9	25	12 0 11.37	1.823	1 10 35.8	11.54	21 40.8
26	11 37 58.91	+1.979	+3 32 0.5	-12.63	23 12.8	26	12 0 55.02	+1.815	+1 5 59.6	-11.48	21 37.5
27	11 38 46.37	1.976	3 26 57.5	12.61	23 9.6	27	12 1 38.46	1.806	1 1 24.9	11.42	21 34.3
28	11 39 33.76	1.973	3 21 55.0	12.59	23 6.5	28	12 2 21.69	1.797	0 56 51.6	11.36	21 31.0
29	11 40 21.08	1.970	3 16 52.9	12.57	23 3.3	29	12 3 4.70	1.788	0 52 19.9	11.29	21 27.8
30	11 41 8.34	1.967	3 11 51.3	12.55	23 0.2	30	12 3 47.48	1.778	0 47 49.8	11.22	21 24.6
31	11 41 55.50	+1.964	+3 6 50.3	-12.53	22 57.0	31	12 4 30.03	+1.768	+0 43 21.4	-11.15	21 21.4
32	11 42 42.57	+1.960	+3 1 49.9	-12.51	22 53.9	32	12 5 12.35	+1.758	+0 38 54.7	-11.08	21 18.2
Day of the Month.						Day of the Month.					
Semidiameter						Semidiameter					
Horizontal Parallax						Horizontal Parallax					
14.6 14.6 14.6 14.7						14.8 14.9 15.1					
1.4 1.4 1.4 1.4						1.4 1.4 1.4					

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	12 5 12.35	+1.758	+0 38 54.7	-11.08	21 18.2	1	12 24 4.33	+1.347	-1 18 5.3	-8.16	19 38.9
2	12 5 54.43	1.748	0 34 29.7	11.00	21 15.0	2	12 24 36.43	1.329	1 21 19.6	8.04	19 35.5
3	12 6 36.25	1.738	0 30 6.5	10.93	21 11.8	3	12 25 8.11	1.311	1 24 30.9	7.91	19 32.1
4	12 7 17.82	1.727	0 25 45.2	10.85	21 8.5	4	12 25 39.35	1.293	1 27 39.2	7.76	19 28.6
5	12 7 59.14	1.716	0 21 25.7	10.77	21 5.3	5	12 26 10.14	1.274	1 30 44.4	7.65	19 25.2
6	12 8 40.20	+1.705	+0 17 8.1	-10.70	21 2.0	6	12 26 40.48	+1.255	-1 33 46.5	-7.52	19 21.8
7	12 9 20.99	1.693	0 12 52.4	10.62	20 58.7	7	12 27 10.37	1.236	1 36 45.6	7.39	19 18.3
8	12 10 1.50	1.682	0 8 38.6	10.54	20 55.4	8	12 27 39.80	1.216	1 39 41.4	7.26	19 14.9
9	12 10 41.74	1.670	0 4 26.8	10.46	20 52.2	9	12 28 8.75	1.196	1 42 34.0	7.12	19 11.4
10	12 11 21.70	1.658	+0 0 17.0	10.37	20 48.9	10	12 28 37.22	1.176	1 45 23.3	6.99	19 8.0
11	12 12 1.36	+1.646	-0 3 50.7	-10.28	20 45.6	11	12 29 5.22	+1.156	-1 48 9.4	-6.85	19 4.5
12	12 12 40.73	1.634	0 7 56.3	10.19	20 42.3	12	12 29 32.73	1.136	1 50 52.1	6.71	19 1.0
13	12 13 19.81	1.622	0 11 59.8	10.10	20 39.1	13	12 29 59.74	1.115	1 53 31.4	6.57	18 57.5
14	12 13 58.58	1.609	0 16 1.1	10.01	20 35.8	14	12 30 26.25	1.094	1 56 7.3	6.43	18 54.0
15	12 14 37.03	1.596	0 20 0.1	9.92	20 32.5	15	12 30 52.25	1.073	1 58 39.7	6.28	18 50.5
16	12 15 15.16	+1.583	-0 23 56.9	-9.82	20 29.2	16	12 31 17.74	+1.051	-2 1 8.7	-6.13	18 47.0
17	12 15 52.98	1.569	0 27 51.4	9.72	20 25.9	17	12 31 42.70	1.029	2 3 34.1	5.98	18 43.4
18	12 16 30.47	1.555	0 31 43.5	9.62	20 22.6	18	12 32 7.12	1.007	2 5 55.9	5.83	18 39.9
19	12 17 7.61	1.541	0 35 33.2	9.52	20 19.3	19	12 32 31.01	0.984	2 8 14.0	5.68	18 36.4
20	12 17 44.40	1.526	0 39 20.4	9.42	20 15.9	20	12 32 54.35	0.961	2 10 28.4	5.52	18 32.8
21	12 18 20.84	+1.511	-0 43 5.2	-9.32	20 12.6	21	12 33 17.13	+0.938	-2 12 39.0	-5.36	18 29.3
22	12 18 56.92	1.496	0 46 47.4	9.21	20 9.2	22	12 33 39.35	0.915	2 14 45.8	5.21	18 25.7
23	12 19 32.63	1.480	0 50 27.0	9.10	20 5.9	23	12 34 1.02	0.891	2 16 48.9	5.05	18 22.1
24	12 20 7.97	1.464	0 54 4.0	8.99	20 2.5	24	12 34 22.10	0.867	2 18 48.1	4.89	18 18.5
25	12 20 42.94	1.448	0 57 38.3	8.88	19 59.2	25	12 34 42.60	0.842	2 20 43.4	4.73	18 14.9
26	12 21 17.52	+1.432	-1 1 9.9	-8.76	19 55.8	26	12 35 2.51	+0.817	-2 22 34.8	-4.57	18 11.3
27	12 21 51.70	1.416	1 4 38.7	8.64	19 52.4	27	12 35 21.83	0.792	2 24 22.4	4.40	18 7.7
28	12 22 25.47	1.399	1 8 4.6	8.52	19 49.0	28	12 35 40.55	0.767	2 26 5.9	4.23	18 4.1
29	12 22 58.84	1.382	1 11 27.7	8.40	19 45.7	29	12 35 58.66	0.742	2 27 45.4	4.06	18 0.4
30	12 23 31.80	1.365	1 14 48.0	8.28	19 42.3	30	12 36 16.16	0.717	2 29 20.9	3.89	17 56.8
31	12 24 4.33	+1.347	-1 18 5.3	-8.16	19 38.9	31	12 36 33.06	+0.691	-2 30 52.4	-3.72	17 53.1
32	12 24 36.43	+1.329	-1 21 19.6	-8.04	19 35.5	32	12 36 49.33	+0.665	-2 32 19.8	-3.55	17 49.4

Day of the Month.	1st.	9th.	17th.	25th.	Day of the Month.	8d.	11th.	19th.	27th.	35th.
Semidiameter	15.2	15.4	15.7	16.0	Semidiameter	16.3	16.6	17.0	17.4	17.8
Horizontal Parallax . . .	1.4	1.5	1.5	1.5	Horizontal Parallax . . .	1.5	1.6	1.6	1.6	1.7

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign - indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.											
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.						
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.							
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m						
1	15 41 38.27	+0.990	-17 35 34.6	-3.04	20 53.0	1	15 51 44.91	+0.612	-18 3 51.9	-1.50	19 1.0						
2	15 42 1.92	0.981	17 36 47.0	3.00	20 49.4	2	15 51 59.43	0.597	18 4 27.0	1.44	18 57.3						
3	15 42 25.34	0.971	17 37 58.3	2.95	20 45.9	3	15 52 13.59	0.582	18 5 0.8	1.39	18 53.6						
4	15 42 48.52	0.961	17 39 8.4	2.90	20 42.3	4	15 52 27.38	0.567	18 5 33.3	1.33	18 49.9						
5	15 43 11.47	0.951	17 40 17.4	2.86	20 38.8	5	15 52 40.80	0.552	18 6 4.5	1.28	18 46.2						
6	15 43 34.17	+0.941	-17 41 25.3	-2.81	20 35.2	6	15 52 53.85	+0.536	-18 6 34.5	-1.22	18 42.5						
7	15 43 56.62	0.931	17 42 32.1	2.76	20 31.7	7	15 53 6.53	0.520	18 7 3.2	1.17	18 38.8						
8	15 44 18.82	0.920	17 43 37.7	2.71	20 28.1	8	15 53 18.83	0.504	18 7 30.6	1.12	18 35.0						
9	15 44 40.77	0.909	17 44 42.1	2.66	20 24.6	9	15 53 30.75	0.488	18 7 56.7	1.06	18 31.3						
10	15 45 2.45	0.898	17 45 45.3	2.61	20 21.0	10	15 53 42.28	0.472	18 8 21.6	1.01	18 27.5						
11	15 45 23.86	+0.887	-17 46 47.4	-2.56	20 17.4	11	15 53 53.43	+0.456	-18 8 45.2	-0.95	18 23.8						
12	15 45 45.01	0.876	17 47 48.3	2.51	20 13.8	12	15 54 4.19	0.440	18 9 7.5	0.90	18 20.0						
13	15 46 5.89	0.864	17 48 47.9	2.46	20 10.2	13	15 54 14.56	0.424	18 9 28.5	0.85	18 16.3						
14	15 46 26.49	0.852	17 49 46.5	2.41	20 6.6	14	15 54 24.55	0.408	18 9 48.2	0.80	18 12.5						
15	15 46 46.80	0.840	17 50 43.9	2.36	20 3.0	15	15 54 34.15	0.392	18 10 6.7	0.74	18 8.7						
16	15 47 6.82	+0.828	-17 51 40.0	-2.31	19 59.4	16	15 54 43.35	+0.375	-18 10 23.9	-0.69	18 4.9						
17	15 47 26.56	0.816	17 52 34.9	2.26	19 55.8	17	15 54 52.15	0.358	18 10 39.8	0.64	18 1.1						
18	15 47 46.00	0.804	17 53 28.7	2.22	19 52.2	18	15 55 0.54	0.342	18 10 54.4	0.59	17 57.3						
19	15 48 5.14	0.792	17 54 21.3	2.17	19 48.6	19	15 55 8.54	0.325	18 11 7.8	0.53	17 53.5						
20	15 48 23.98	0.779	17 55 12.6	2.12	19 44.9	20	15 55 16.13	0.308	18 11 19.9	0.48	17 49.7						
21	15 48 42.52	+0.766	-17 56 2.7	-2.07	19 41.3	21	15 55 23.31	+0.291	-18 11 30.7	-0.42	17 45.9						
22	15 49 0.74	0.753	17 56 51.5	2.02	19 37.7	22	15 55 30.09	0.274	18 11 40.3	0.37	17 42.1						
23	15 49 18.64	0.740	17 57 39.2	1.96	19 34.1	23	15 55 36.45	0.257	18 11 48.6	0.32	17 38.2						
24	15 49 36.23	0.726	17 58 25.7	1.91	19 30.4	24	15 55 42.40	0.240	18 11 55.6	0.26	17 34.4						
25	15 49 53.50	0.712	17 59 10.8	1.86	19 26.8	25	15 55 47.93	0.222	18 12 1.3	0.21	17 30.6						
26	15 50 10.44	+0.698	-17 59 54.7	-1.81	19 23.1	26	15 55 53.06	+0.205	-18 12 5.8	-0.16	17 26.7						
27	15 50 27.04	0.684	18 0 37.4	1.76	19 19.4	27	15 55 57.76	0.187	18 12 8.9	0.11	17 22.8						
28	15 50 43.30	0.670	18 1 18.8	1.70	19 15.7	28	15 56 2.04	0.170	18 12 10.8	-0.06	17 19.0						
29	15 50 59.23	0.656	18 1 59.0	1.65	19 12.1	29	15 56 5.90	0.152	18 12 11.5	0.00	17 15.1						
30	15 51 14.82	0.642	18 2 37.9	1.60	19 8.4	30	15 56 9.35	0.135	18 12 11.0	+0.05	17 11.2						
31	15 51 30.05	+0.627	-18 3 15.5	-1.55	19 4.7	31	15 56 12.37	+0.117	-18 12 9.2	+0.10	17 7.4						
32	15 51 44.91	+0.612	-18 3 51.9	-1.50	19 1.0	32	15 56 14.97	+0.099	-18 12 6.1	+0.15	17 3.5						
Day of the Month.					1st.	9th.	17th.	25th.	Day of the Month.					2d.	10th.	18th.	26th.
Semidiameter					7.4	7.4	7.5	7.6	Semidiameter					7.7	7.8	7.9	8.0
Horizontal Parallax					0.8	0.8	0.9	0.9	Horizontal Parallax					0.9	0.9	0.9	0.9

NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.

GREENWICH MEAN TIME.

MARCH.						APRIL.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	15 56 5.90	+0.152	18 12 11.5	+0.00	17 15.1	1	15 54 40.13	-0.371	18 2 45.1	+1.47	15 11.7
2	15 56 9.35	0.135	18 12 11.0	0.05	17 11.2	2	15 54 31.05	0.386	18 2 9.4	1.51	15 7.6
3	15 56 12.37	0.117	18 12 9.2	0.10	17 7.4	3	15 54 21.61	0.401	18 1 32.7	1.55	15 3.5
4	15 56 14.97	0.099	18 12 6.1	0.15	17 3.5	4	15 54 11.81	0.416	18 0 55.0	1.59	14 59.4
5	15 56 17.14	0.081	18 12 1.8	0.20	16 59.6	5	15 54 1.67	0.430	18 0 16.5	1.63	14 55.3
6	15 56 18.89	+0.063	18 11 56.4	+0.26	16 55.6	6	15 53 51.18	-0.444	17 59 37.1	+1.67	14 51.2
7	15 56 20.22	0.046	18 11 49.6	0.31	16 51.7	7	15 53 40.35	0.458	17 58 56.8	1.71	14 47.0
8	15 56 21.13	0.028	18 11 41.6	0.36	16 47.8	8	15 53 29.19	0.472	17 58 15.5	1.74	14 42.9
9	15 56 21.62	+0.011	18 11 32.4	0.41	16 43.9	9	15 53 17.71	0.485	17 57 33.4	1.78	14 38.8
10	15 56 21.68	-0.007	18 11 22.1	0.46	16 40.0	10	15 53 5.91	0.498	17 56 50.5	1.81	14 34.7
11	15 56 21.33	-0.024	18 11 10.5	+0.51	16 36.1	11	15 52 53.78	-0.511	17 56 6.9	+1.84	14 30.6
12	15 56 20.56	0.042	18 10 57.7	0.56	16 32.1	12	15 52 41.36	0.524	17 55 22.4	1.87	14 26.4
13	15 56 19.37	0.059	18 10 43.8	0.61	16 28.1	13	15 52 28.64	0.536	17 54 37.1	1.90	14 22.3
14	15 56 17.75	0.076	18 10 28.7	0.66	16 24.2	14	15 52 15.63	0.548	17 53 51.1	1.93	14 18.1
15	15 56 15.73	0.093	18 10 12.4	0.71	16 20.2	15	15 52 2.32	0.560	17 53 4.3	1.96	14 14.0
16	15 56 13.30	-0.110	18 9 54.9	+0.76	16 16.2	16	15 51 48.73	-0.572	17 52 16.8	+1.99	14 9.8
17	15 56 10.46	0.127	18 9 36.3	0.81	16 12.2	17	15 51 34.88	0.583	17 51 28.6	2.02	14 5.6
18	15 56 7.22	0.144	18 9 16.6	0.85	16 8.2	18	15 51 20.76	0.594	17 50 39.7	2.05	14 1.5
19	15 56 3.57	0.161	18 8 55.7	0.89	16 4.2	19	15 51 6.37	0.605	17 49 50.1	2.08	13 57.3
20	15 55 59.52	0.178	18 8 33.7	0.94	16 0.2	20	15 50 51.72	0.615	17 48 59.9	2.11	13 53.1
21	15 55 55.06	-0.195	18 8 10.6	+0.99	15 56.2	21	15 50 36.83	-0.625	17 48 9.1	+2.14	13 48.9
22	15 55 50.20	0.212	18 7 46.4	1.03	15 52.2	22	15 50 21.71	0.635	17 47 17.7	2.16	13 44.8
23	15 55 44.94	0.228	18 7 21.0	1.08	15 48.2	23	15 50 6.35	0.645	17 46 25.7	2.18	13 40.6
24	15 55 39.29	0.244	18 6 54.6	1.12	15 44.1	24	15 49 50.76	0.654	17 45 33.1	2.20	13 36.4
25	15 55 33.24	0.260	18 6 27.1	1.17	15 40.1	25	15 49 34.96	0.663	17 44 40.0	2.22	13 32.2
26	15 55 26.80	-0.276	18 5 58.5	+1.21	15 36.1	26	15 49 18.95	-0.671	17 43 46.4	+2.24	13 28.0
27	15 55 19.97	0.292	18 5 28.8	1.26	15 32.0	27	15 49 2.74	0.679	17 42 52.4	2.26	13 23.8
28	15 55 12.76	0.308	18 4 58.1	1.30	15 28.0	28	15 48 46.33	0.687	17 41 57.9	2.28	13 19.6
29	15 55 5.17	0.324	18 4 26.4	1.34	15 23.9	29	15 48 29.75	0.695	17 41 3.0	2.30	13 15.4
30	15 54 57.19	0.340	18 3 53.6	1.39	15 19.8	30	15 48 12.99	0.702	17 40 7.7	2.32	13 11.2
31	15 54 48.84	-0.356	18 3 19.8	+1.43	15 15.7	31	15 47 56.05	-0.709	17 39 12.0	+2.34	13 7.0
32	15 54 40.13	-0.371	18 2 45.1	+1.47	15 11.7	32	15 47 38.96	-0.715	17 38 16.0	+2.35	13 2.7

Day of the Month.	6th.	14th.	22d.	30th.	Day of the Month.	7th.	15th.	23d.	31st.
Semidiameter	8.1	8.2	8.3	8.4	Semidiameter	8.5	8.6	8.6	8.7
Horizontal Parallax . . .	0.9	0.9	0.9	1.0	Horizontal Parallax . . .	1.0	1.0	1.0	1.0

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign - indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	15 47 56.05	-0.709	-17 39 12.0	+2.34	13 7.0	1	15 38 39.71	-0.726	-17 10 3.6	+2.18	10 55.8
2	15 47 38.96	0.715	17 38 16.0	2.35	13 2.7	2	15 38 22.36	0.720	17 9 11.7	2.15	10 51.6
3	15 47 21.73	0.721	17 37 19.7	2.36	12 58.5	3	15 38 5.15	0.714	17 8 20.5	2.12	10 47.4
4	15 47 4.36	0.726	17 36 23.1	2.37	12 54.3	4	15 37 48.09	0.707	17 7 29.9	2.09	10 43.2
5	15 46 46.85	0.731	17 35 26.2	2.37	12 50.1	5	15 37 31.19	0.700	17 6 40.0	2.06	10 39.0
6	15 46 29.22	-0.736	-17 34 29.1	+2.38	12 45.8	6	15 37 14.45	-0.693	-17 5 50.8	+2.03	10 34.8
7	15 46 11.49	0.740	17 33 31.8	2.38	12 41.6	7	15 36 57.88	0.686	17 5 2.3	2.00	10 30.6
8	15 45 53.67	0.744	17 32 34.4	2.39	12 37.4	8	15 36 41.50	0.678	17 4 14.6	1.97	10 26.4
9	15 45 35.75	0.747	17 31 36.9	2.39	12 33.2	9	15 36 25.31	0.670	17 3 27.7	1.94	10 22.2
10	15 45 17.74	0.750	17 30 39.2	2.40	12 28.9	10	15 36 9.31	0.662	17 2 41.7	1.91	10 18.0
11	15 44 59.67	-0.753	-17 29 41.5	+2.40	12 24.7	11	15 35 53.52	-0.654	-17 1 56.5	+1.87	10 13.8
12	15 44 41.54	0.756	17 28 43.7	2.41	12 20.5	12	15 35 37.94	0.645	17 1 12.1	1.83	10 9.6
13	15 44 23.36	0.758	17 27 45.9	2.41	12 16.2	13	15 35 22.57	0.636	17 0 28.6	1.80	10 5.4
14	15 44 5.13	0.760	17 26 48.1	2.41	12 12.0	14	15 35 7.42	0.626	16 59 46.0	1.76	10 1.2
15	15 43 46.87	0.761	17 25 50.4	2.40	12 7.8	15	15 34 52.51	0.616	16 59 4.3	1.72	9 57.0
16	15 43 28.58	-0.762	-17 24 52.7	+2.40	12 3.5	16	15 34 37.84	-0.606	-16 58 23.6	+1.68	9 52.8
17	15 43 10.26	0.763	17 23 55.1	2.39	11 59.3	17	15 34 23.41	0.596	16 57 43.9	1.64	9 48.7
18	15 42 51.94	0.763	17 22 57.6	2.39	11 55.1	18	15 34 9.22	0.585	16 57 5.3	1.60	9 44.5
19	15 42 33.63	0.763	17 22 0.3	2.38	11 50.8	19	15 33 55.29	0.574	16 56 27.6	1.55	9 40.3
20	15 42 15.33	0.762	17 21 3.2	2.37	11 46.6	20	15 33 41.63	0.563	16 55 51.0	1.51	9 36.2
21	15 41 57.03	-0.761	-17 20 6.3	+2.36	11 42.3	21	15 33 28.24	-0.552	-16 55 15.5	+1.46	9 32.0
22	15 41 38.76	0.760	17 19 9.6	2.35	11 38.1	22	15 33 15.12	0.541	16 54 41.0	1.41	9 27.9
23	15 41 20.54	0.758	17 18 13.2	2.34	11 33.9	23	15 33 2.28	0.529	16 54 7.6	1.37	9 23.7
24	15 41 2.37	0.756	17 17 17.1	2.33	11 29.6	24	15 32 49.73	0.517	16 53 35.4	1.32	9 19.6
25	15 40 44.24	0.753	17 16 21.4	2.32	11 25.4	25	15 32 37.48	0.505	16 53 4.4	1.27	9 15.5
26	15 40 26.18	-0.750	-17 15 26.1	+2.30	11 21.2	26	15 32 25.52	-0.492	-16 52 34.6	+1.22	9 11.3
27	15 40 8.20	0.747	17 14 31.2	2.28	11 16.9	27	15 32 13.87	0.479	16 52 6.0	1.17	9 7.2
28	15 39 50.30	0.744	17 13 36.7	2.26	11 12.7	28	15 32 2.54	0.466	16 51 38.6	1.12	9 3.1
29	15 39 32.48	0.740	17 12 42.6	2.24	11 8.5	29	15 31 51.52	0.453	16 51 12.4	1.07	8 59.0
30	15 39 14.77	0.736	17 11 49.1	2.22	11 4.3	30	15 31 40.81	0.439	16 50 47.5	1.02	8 54.9
31	15 38 57.18	-0.731	-17 10 56.1	+2.20	11 0.0	31	15 31 30.44	-0.425	-16 50 23.9	+0.96	8 50.8
32	15 38 39.71	-0.726	-17 10 3.6	+2.18	10 55.8	32	15 31 20.41	-0.411	-16 50 1.6	+0.90	8 46.7

Day of the Month.	1st.	9th.	17th.	25th.	Day of the Month.	3d.	10th.	18th.	26th.
Semidiameter	8.7	8.7	8.7	8.7	Semidiameter	8.7	8.6	8.6	8.5
Horizontal Parallax . . .	1.0	1.0	1.0	1.0	Horizontal Parallax . . .	1.0	1.0	1.0	1.0

NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.

GREENWICH MEAN TIME.

GREENWICH MEAN TIME.											
JULY.						AUGUST.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	15 31 30.44	-0.425	-16 50 23.9	+0.96	8 50.8	1	15 29 8.61	+0.058	-16 49 35.3	-0.86	6 46.6
2	15 31 20.41	0.411	16 50 1.6	0.90	8 46.7	2	15 29 10.20	0.074	16 49 56.7	0.92	6 42.7
3	15 31 10.70	0.397	16 49 40.6	0.85	8 42.6	3	15 29 12.18	0.091	16 50 19.5	0.98	6 38.8
4	15 31 1.33	0.383	16 49 20.8	0.80	8 38.5	4	15 29 14.56	0.107	16 50 43.7	1.04	6 34.9
5	15 30 52.32	0.368	16 49 2.5	0.74	8 34.4	5	15 29 17.33	0.124	16 51 9.2	1.10	6 31.0
6	15 30 43.65	-0.354	-16 48 45.5	+0.69	8 30.4	6	15 29 20.50	+0.140	-16 51 36.2	-1.15	6 27.2
7	15 30 35.33	0.339	16 48 29.8	0.63	8 26.3	7	15 29 24.06	0.157	16 52 4.6	1.21	6 23.3
8	15 30 27.36	0.324	16 48 15.4	0.58	8 22.2	8	15 29 28.01	0.173	16 52 34.4	1.27	6 19.4
9	15 30 19.76	0.309	16 48 2.4	0.52	8 18.2	9	15 29 32.35	0.189	16 53 5.5	1.33	6 15.6
10	15 30 12.52	0.294	16 47 50.8	0.46	8 14.1	10	15 29 37.08	0.205	16 53 38.0	1.39	6 11.7
11	15 30 5.64	-0.279	-16 47 40.6	+0.40	8 10.1	11	15 29 42.20	+0.221	-16 54 11.8	-1.44	6 7.9
12	15 29 59.11	0.264	16 47 31.8	0.34	8 6.1	12	15 29 47.70	0.237	16 54 47.0	1.50	6 4.0
13	15 29 52.06	0.249	16 47 24.4	0.28	8 2.0	13	15 29 53.59	0.253	16 55 23.6	1.55	6 0.2
14	15 29 47.18	0.234	16 47 18.4	0.22	7 58.0	14	15 29 59.87	0.269	16 56 1.5	1.61	5 56.4
15	15 29 41.77	0.218	16 47 13.8	0.16	7 54.0	15	15 30 6.53	0.285	16 56 40.7	1.66	5 52.6
16	15 29 36.74	-0.202	-16 47 10.5	+0.10	7 50.0	16	15 30 13.57	+0.301	-16 57 21.2	-1.71	5 48.8
17	15 29 32.08	0.186	16 47 8.8	+0.04	7 46.0	17	15 30 20.98	0.317	16 58 2.9	1.77	5 44.9
18	15 29 27.80	0.170	16 47 8.5	-0.02	7 42.0	18	15 30 28.78	0.333	16 58 45.9	1.82	5 41.1
19	15 29 23.90	0.154	16 47 9.6	0.08	7 38.0	19	15 30 36.96	0.349	16 59 30.2	1.88	5 37.3
20	15 29 20.39	0.138	16 47 12.0	0.14	7 34.0	20	15 30 45.51	0.365	17 0 15.8	1.93	5 33.5
21	15 29 17.26	-0.122	-16 47 16.0	-0.20	7 30.0	21	15 30 54.44	+0.380	-17 1 2.7	-1.98	5 29.8
22	15 29 14.52	0.106	16 47 21.4	0.26	7 26.0	22	15 31 3.75	0.396	17 1 50.9	2.03	5 26.0
23	15 29 12.16	0.090	16 47 28.2	0.32	7 22.1	23	15 31 13.43	0.411	17 2 40.3	2.08	5 22.2
24	15 29 10.19	0.074	16 47 36.5	0.38	7 18.1	24	15 31 23.47	0.427	17 3 30.8	2.13	5 18.4
25	15 29 8.61	0.058	16 47 46.3	0.44	7 14.1	25	15 31 33.88	0.442	17 4 22.6	2.18	5 14.7
26	15 29 7.43	-0.042	-16 47 57.5	-0.50	7 10.2	26	15 31 44.67	+0.457	-17 5 15.6	-2.23	5 10.9
27	15 29 6.64	0.025	16 48 10.2	0.56	7 6.2	27	15 31 55.82	0.472	17 6 9.7	2.28	5 7.2
28	15 29 6.24	-0.009	16 48 24.3	0.62	7 2.3	28	15 32 7.33	0.487	17 7 5.0	2.33	5 3.4
29	15 29 6.24	+0.008	16 48 39.9	0.68	6 58.4	29	15 32 19.20	0.502	17 8 1.4	2.38	4 59.7
30	15 29 6.64	0.024	16 48 56.9	0.74	6 54.5	30	15 32 31.43	0.517	17 8 59.0	2.43	4 56.0
31	15 29 7.43	+0.041	-16 49 15.4	-0.80	6 50.5	31	15 32 44.02	+0.532	-17 9 57.7	-2.47	4 52.3
32	15 29 8.61	+0.058	-16 49 35.3	-0.86	6 46.6	32	15 32 56.96	+0.547	-17 10 57.4	-2.52	4 48.6
Day of the Month.						Day of the Month.					
Semidiameter						Semidiameter					
Horizontal Parallax						Horizontal Parallax					

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign - indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.						OCTOBER.											
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.						
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.							
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m						
1	15 32 56.96	+0.547	-17 10 57.4	-2.52	4 48.6	1	15 41 53.55	+0.924	-17 47 45.1	-3.50	2 59.5						
2	15 33 10.25	0.561	17 11 58.2	2.56	4 44.9	2	15 42 15.85	0.934	17 49 9.5	3.52	2 56.0						
3	15 33 23.89	0.575	17 13 0.1	2.60	4 41.2	3	15 42 38.39	0.944	17 50 34.3	3.54	2 52.4						
4	15 33 37.87	0.589	17 14 3.0	2.64	4 37.5	4	15 43 1.19	0.954	17 51 59.6	3.56	2 48.9						
5	15 33 52.18	0.603	17 15 6.9	2.68	4 33.8	5	15 43 24.22	0.964	17 53 25.3	3.58	2 45.3						
6	15 34 6.83	+0.617	-17 16 11.8	-2.72	4 30.1	6	15 43 47.48	+0.974	-17 54 51.4	-3.60	2 41.8						
7	15 34 21.82	0.631	17 17 17.7	2.76	4 26.4	7	15 44 10.97	0.984	17 56 17.9	3.62	2 38.2						
8	15 34 37.14	0.645	17 18 24.5	2.80	4 22.7	8	15 44 34.68	0.993	17 57 44.9	3.64	2 34.7						
9	15 34 52.78	0.659	17 19 32.3	2.84	4 19.0	9	15 44 58.62	1.002	17 59 12.2	3.65	2 31.1						
10	15 35 8.75	0.672	17 20 41.0	2.88	4 15.4	10	15 45 22.77	1.011	18 0 39.8	3.66	2 27.6						
11	15 35 25.04	+0.685	-17 21 50.6	-2.92	4 11.7	11	15 45 47.13	+1.020	-18 2 7.7	-3.67	2 24.1						
12	15 35 41.64	0.698	17 23 1.1	2.96	4 8.1	12	15 46 11.71	1.029	18 3 35.9	3.68	2 20.6						
13	15 35 58.56	0.711	17 24 12.5	3.00	4 4.4	13	15 46 36.49	1.037	18 5 4.5	3.69	2 17.0						
14	15 36 15.80	0.724	17 25 24.7	3.03	4 0.8	14	15 47 1.47	1.045	18 6 33.3	3.70	2 13.5						
15	15 36 33.35	0.737	17 26 37.8	3.06	3 57.1	15	15 47 26.65	1.053	18 8 2.3	3.71	2 10.0						
16	15 36 51.20	+0.750	-17 27 51.7	-3.10	3 53.5	16	15 47 52.03	+1.061	-18 9 31.5	-3.72	2 6.5						
17	15 37 9.35	0.763	17 29 6.4	3.13	3 49.8	17	15 48 17.60	1.069	18 11 1.0	3.73	2 3.0						
18	15 37 27.80	0.775	17 30 21.8	3.17	3 46.2	18	15 48 43.35	1.077	18 12 30.7	3.74	1 59.5						
19	15 37 46.55	0.787	17 31 38.0	3.20	3 42.6	19	15 49 9.29	1.085	18 14 0.5	3.74	1 56.0						
20	15 38 5.59	0.799	17 32 55.0	3.23	3 39.0	20	15 49 35.41	1.092	18 15 30.5	3.75	1 52.5						
21	15 38 24.92	+0.811	-17 34 12.7	-3.26	3 35.4	21	15 50 1.71	+1.099	-18 17 0.7	-3.75	1 49.0						
22	15 38 44.54	0.823	17 35 31.1	3.29	3 31.8	22	15 50 28.18	1.106	18 18 31.0	3.76	1 45.5						
23	15 39 4.45	0.835	17 36 50.3	3.32	3 28.2	23	15 50 54.81	1.113	18 20 1.3	3.76	1 42.0						
24	15 39 24.64	0.847	17 38 10.1	3.34	3 24.6	24	15 51 21.60	1.120	18 21 31.7	3.76	1 38.5						
25	15 39 45.11	0.859	17 39 30.5	3.36	3 21.0	25	15 51 48.56	1.126	18 23 2.2	3.77	1 35.0						
26	15 40 5.85	+0.870	-17 40 51.4	-3.39	3 17.4	26	15 52 15.66	+1.132	-18 24 32.7	-3.77	1 31.5						
27	15 40 26.87	0.881	17 42 13.0	3.41	3 13.8	27	15 52 42.91	1.138	18 26 3.2	3.77	1 28.0						
28	15 40 48.15	0.892	17 43 35.2	3.44	3 10.2	28	15 53 10.31	1.144	18 27 33.7	3.77	1 24.6						
29	15 41 9.69	0.903	17 44 57.9	3.46	3 6.6	29	15 53 37.85	1.150	18 29 4.2	3.77	1 21.1						
30	15 41 31.49	0.914	17 46 21.2	3.48	3 3.1	30	15 54 5.52	1.155	18 30 34.7	3.77	1 17.6						
31	15 41 53.55	+0.924	-17 47 45.1	-3.50	2 59.5	31	15 54 33.31	+1.160	-18 32 5.1	-3.76	1 14.1						
32	15 42 15.85	+0.934	-17 49 9.5	-3.52	2 56.0	32	15 55 1.24	+1.165	-18 33 35.4	-3.76	1 10.7						
Day of the Month.					6th.	14th.	22d.	30th.	Day of the Month.					8th.	16th.	24th.	32d.
Semidiameter					7.6	7.5	7.4	7.4	Semidiameter					7.3	7.2	7.2	7.2
Horizontal Parallax . .					0.9	0.9	0.8	0.8	Horizontal Parallax . .					0.8	0.8	0.8	0.8

NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.						
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.		
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m	
1	15 55 1.24	+1.165	-18 33 35.4	-3.76	1 10.7	1	16 9 34.80	+1.231	-19 16 49.4	-3.35	23 23.9	
2	15 55 29.29	1.170	18 35 5.6	3.76	1 7.3	2	16 10 4.34	1.230	19 18 9.5	3.33	23 20.4	
3	15 55 57.45	1.175	18 36 35.7	3.75	1 3.8	3	16 10 33.86	1.229	19 19 29.1	3.31	23 17.0	
4	15 56 25.72	1.180	18 38 5.7	3.75	1 0.4	4	16 11 3.35	1.228	19 20 48.1	3.28	23 13.5	
5	15 56 54.10	1.184	18 39 35.6	3.74	0 56.9	5	16 11 32.80	1.226	19 22 6.5	3.26	23 10.1	
6	15 57 22.58	+1.188	-18 41 5.3	-3.74	0 53.4	6	16 12 2.21	+1.224	-19 23 24.3	-3.23	23 6.6	
7	15 57 51.15	1.192	18 42 34.8	3.73	0 49.9	7	16 12 31.57	1.222	19 24 41.5	3.21	23 3.2	
8	15 58 19.82	1.196	18 44 4.1	3.72	0 46.5	8	16 13 0.89	1.220	19 25 58.1	3.18	22 59.7	
9	15 58 48.58	1.200	18 45 33.2	3.71	0 43.0	9	16 13 30.15	1.218	19 27 14.1	3.15	22 56.3	
10	15 59 17.42	1.203	18 47 2.1	3.70	0 39.6	10	16 13 59.35	1.216	19 28 29.5	3.13	22 52.8	
11	15 59 46.34	+1.206	-18 48 30.7	-3.69	0 36.1	11	16 14 28.50	+1.213	-19 29 44.2	-3.10	22 49.4	
12	16 0 15.34	1.209	18 49 59.1	3.68	0 32.7	12	16 14 57.58	1.210	19 30 58.3	3.08	22 45.9	
13	16 0 44.41	1.212	18 51 27.2	3.67	0 29.2	13	16 15 26.58	1.207	19 32 11.7	3.05	22 42.5	
14	16 1 13.55	1.215	18 52 55.0	3.65	0 25.8	14	16 15 55.51	1.204	19 33 24.5	3.02	22 39.0	
15	16 1 42.75	1.218	18 54 22.5	3.64	0 22.3	15	16 16 24.36	1.200	19 34 36.6	2.99	22 35.6	
16	16 2 12.01	+1.220	-18 55 49.7	-3.63	0 18.9	16	16 16 53.12	+1.196	-19 35 48.0	-2.96	22 32.1	
17	16 2 41.34	1.222	18 57 16.6	3.61	0 15.4	17	16 17 21.79	1.192	19 36 58.7	2.93	22 28.7	
18	16 3 10.71	1.224	18 58 43.2	3.60	0 12.0	18	16 17 50.36	1.188	19 38 8.7	2.90	22 25.2	
19	16 3 40.12	1.226	19 0 9.4	3.58	0 8.6	19	16 18 18.84	1.184	19 39 18.0	2.87	22 21.8	
20	16 4 9.57	1.228	19 1 35.2	3.57	0 5.2	20	16 18 47.21	1.179	19 40 26.5	2.84	22 18.3	
21	16 4 39.07	+1.229	-19 3 0.5	-3.55	1 1.7	21	16 19 15.46	+1.174	-19 41 34.3	-2.81	22 14.8	
22	16 5 8.59	1.230	19 4 25.4	3.54	23 54.8	22	16 19 43.59	1.169	19 42 41.3	2.78	22 11.3	
23	16 5 38.13	1.231	19 5 49.9	3.52	23 51.4	23	16 20 11.61	1.164	19 43 47.6	2.75	22 7.9	
24	16 6 7.70	1.232	19 7 14.0	3.50	23 47.9	24	16 20 39.50	1.159	19 44 53.1	2.71	22 4.4	
25	16 6 37.29	1.232	19 8 37.8	3.48	23 44.5	25	16 21 7.25	1.153	19 45 57.9	2.68	22 0.9	
26	16 7 6.88	+1.233	-19 10 1.0	-3.46	23 41.0	26	16 21 34.86	+1.147	-19 47 2.0	-2.65	21 57.4	
27	16 7 36.48	1.233	19 11 23.7	3.44	23 37.6	27	16 22 2.32	1.141	19 48 5.3	2.62	21 54.0	
28	16 8 6.07	1.233	19 12 45.9	3.42	23 34.1	28	16 22 29.64	1.135	19 49 7.8	2.59	21 50.5	
29	16 8 35.66	1.233	19 14 7.6	3.39	23 30.7	29	16 22 56.80	1.128	19 50 9.5	2.55	21 47.0	
30	16 9 5.24	1.232	19 15 28.8	3.37	23 27.3	30	16 23 23.80	1.122	19 51 10.4	2.52	21 43.5	
31	16 9 34.80	+1.231	-19 16 49.4	-3.35	23 23.9	31	16 23 50.64	+1.115	-19 52 10.4	-2.49	21 40.0	
32	16 10 4.34	+1.230	-19 18 9.5	-3.33	23 20.4	32	16 24 17.31	+1.108	-19 53 9.6	-2.46	21 36.5	
Day of the Month.		1st.	9th.	17th.	25th.	Day of the Month.		2d.	11th.	19th.	27th.	25th.
Semidiameter		7.2	7.1	7.1	7.1	Semidiameter		7.1	7.1	7.2	7.2	7.3
Horizontal Parallax . .		0.8	0.8	0.8	0.8	Horizontal Parallax . .		0.8	0.8	0.8	0.8	0.8

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign - indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.											
Month and Day.	Apparent Right Ascension.	Var. of R. A. for 1 Day.	Apparent Declination.	Var. of Decl. for 1 Day.	Meridian Passage.	Month and Day.	Apparent Right Ascension.	Var. of R. A. for 1 Day.	Apparent Declination.	Var. of Decl. for 1 Day.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
Jan. 1	h m s	s	° ' "	"	h m	July 4	h m s	s	° ' "	"	h m
5	15 40 51.39	+12.120	19 22 25.1	-40.02	20 52.0	8	15 32 12.67	-5.817	18 53 45.9	+19.17	8 39.7
9	15 41 38.73	11.542	19 25 0.9	37.86	20 37.1	12	15 31 50.81	5.109	18 52 34.1	16.71	8 23.6
13	15 42 23.67	10.922	19 27 27.8	35.60	20 22.1	16	15 31 31.84	4.370	18 51 32.4	14.14	8 7.6
17	15 43 6.05	10.261	19 29 45.6	33.26	20 7.0	20	15 31 15.88	3.607	18 50 41.1	11.47	7 51.6
21	15 43 45.71	9.565	19 31 53.8	30.84	19 52.0	24	15 31 3.01	2.823	18 50 0.8	8.69	7 35.7
25	15 44 22.53	+8.839	19 33 52.2	-28.35	19 36.8	28	15 30 53.33	-2.012	18 49 31.7	+5.82	7 19.8
29	15 44 56.37	8.075	19 35 40.5	25.76	19 21.6	Aug. 1	15 30 46.94	1.182	18 49 14.3	+2.88	7 4.0
Feb. 2	15 45 27.09	7.280	19 37 18.2	23.08	19 6.4	5	15 30 43.89	-0.338	18 49 8.7	-0.10	6 48.2
6	15 45 54.57	6.454	19 38 45.1	20.35	18 51.1	9	15 30 44.24	+0.512	18 49 15.1	3.10	6 32.5
10	15 46 18.69	5.604	19 40 1.0	17.59	18 35.8	13	15 30 47.99	1.363	18 49 33.5	6.09	6 16.8
14	15 46 39.38	+4.736	19 41 5.8	-14.80	18 20.4	17	15 30 55.14	+2.211	18 50 3.8	-9.08	6 1.2
18	15 46 56.56	3.855	19 41 59.4	11.99	18 4.9	21	15 31 5.67	3.053	18 50 46.1	12.04	5 45.7
22	15 47 10.21	2.966	19 42 41.7	9.15	17 49.4	25	15 31 19.56	3.892	18 51 40.1	14.96	5 30.2
26	15 47 20.28	2.067	19 43 12.6	6.31	17 33.9	29	15 31 36.80	4.726	18 52 45.7	17.85	5 14.7
Mar. 2	15 47 29.58	+0.258	19 43 40.3	-0.62	17 2.5	Sept. 2	15 31 57.35	5.548	18 54 2.8	20.66	4 59.3
6	15 47 28.81	-0.642	19 43 37.1	+2.21	16 46.8	6	15 32 21.16	+6.351	18 55 30.9	-23.39	4 44.0
10	15 47 24.46	1.527	19 43 22.7	4.97	16 31.0	10	15 32 48.13	7.130	18 57 9.8	26.03	4 28.7
14	15 47 16.62	2.390	19 42 57.4	7.67	16 15.1	14	15 33 18.17	7.885	18 58 59.0	28.54	4 13.5
18	15 47 5.37	3.232	19 42 21.4	10.31	15 50.2	18	15 33 51.18	8.617	19 0 58.0	30.94	3 58.3
22	15 46 50.80	-4.049	19 41 35.0	+12.89	15 43.2	22	15 34 27.07	9.323	19 3 6.4	33.23	3 43.2
26	15 46 33.02	4.835	19 40 38.4	15.40	15 27.2	26	15 35 5.73	+10.004	19 5 23.7	-35.40	3 28.1
30	15 46 12.14	5.590	19 39 31.9	17.81	15 11.1	30	15 35 47.06	10.655	19 7 49.4	37.43	3 13.1
Apr. 3	15 45 48.33	6.306	19 38 16.1	20.07	14 55.0	Oct. 4	15 36 30.92	11.268	19 10 22.9	39.30	2 58.1
7	15 45 21.76	6.970	19 36 51.5	22.22	14 38.8	8	15 37 17.15	11.841	19 13 3.6	41.01	2 43.1
11	15 44 52.64	-7.580	19 35 18.5	+24.23	14 22.6	12	15 38 5.60	12.376	19 15 50.8	42.55	2 28.2
15	15 44 21.19	8.135	19 33 38.0	26.04	14 6.3	16	15 38 56.11	+12.874	19 18 43.8	-43.94	2 13.3
19	15 43 47.63	8.636	19 31 50.4	27.72	13 50.0	20	15 39 48.54	13.333	19 21 42.1	45.18	1 58.5
23	15 43 12.18	9.080	19 29 56.4	29.23	13 33.7	24	15 40 42.72	13.752	19 24 45.0	46.24	1 43.6
27	15 42 35.07	9.463	19 27 56.8	30.56	13 17.4	28	15 41 38.50	14.129	19 27 51.8	47.14	1 28.8
May 1	15 41 56.56	9.780	19 25 52.2	+31.69	13 1.0	Nov. 1	15 42 35.69	14.461	19 31 1.9	47.87	1 14.0
5	15 41 16.92	10.027	19 23 43.6	32.57	12 44.6	5	15 43 34.10	+14.737	19 34 14.5	-48.40	0 59.3
9	15 40 36.44	10.199	19 21 31.9	33.23	12 28.2	9	15 44 33.52	14.966	19 37 28.8	48.77	0 44.5
13	15 39 55.42	10.301	19 19 18.0	33.69	12 11.8	13	15 45 33.77	15.150	19 40 44.4	48.98	0 29.8
17	15 39 14.12	10.337	19 17 2.7	33.91	11 55.4	17	15 46 34.66	15.288	19 44 0.4	49.01	0 15.1
21	15 38 32.81	-10.307	19 14 47.0	+33.91	11 39.0	21	15 47 36.01	15.378	19 47 16.3	48.90	0 0.4
25	15 37 51.75	10.210	19 12 31.7	33.69	11 22.6	25	15 48 37.62	+15.419	19 50 31.4	-48.63	23 42.0
29	15 37 11.22	10.042	19 10 17.8	33.22	11 6.2	29	15 49 39.29	15.405	19 53 45.1	48.18	23 27.3
June 2	15 36 31.51	9.802	19 8 6.3	32.50	10 49.8	Dec. 3	15 50 40.79	15.336	19 56 56.6	47.55	23 12.5
6	15 35 52.89	9.497	19 5 58.1	31.55	10 33.4	7	15 51 41.91	15.215	20 0 5.3	46.80	22 57.8
10	15 35 15.62	-9.128	19 3 54.2	+30.36	10 17.1	11	15 52 42.44	15.043	20 3 10.8	45.90	22 43.1
14	15 34 39.94	8.702	19 1 55.5	28.98	10 0.8	15	15 53 42.19	+14.824	20 6 12.3	-44.86	22 28.4
18	15 34 6.07	8.226	19 0 2.6	27.42	9 44.5	19	15 54 40.97	14.557	20 9 9.5	43.68	22 13.6
22	15 33 34.20	7.700	18 58 16.4	25.65	9 28.2	23	15 55 38.58	14.238	20 12 1.6	42.37	21 58.9
26	15 33 4.54	7.121	18 56 37.7	23.67	9 12.0	27	15 56 34.81	13.868	20 14 48.3	40.95	21 44.1
30	15 32 37.30	-6.491	18 55 7.3	+21.50	8 55.9	31	15 57 29.45	13.442	20 17 29.0	39.39	21 29.2
July 4	15 32 12.67	-5.817	18 53 45.9	+19.17	8 39.7	35	15 58 22.28	+12.967	20 20 3.3	-37.73	21 14.4
							15 59 13.13	+12.451	20 22 30.7	-35.95	20 59.5

Greatest semidiameter,
Least semidiameter,

May 18, 1".58
November 21, 1".69

Greatest horizontal parallax,
Least horizontal parallax,

May 28, 0".50
November 21, 0".45

GREENWICH MEAN TIME.

Month and Day.	Apparent Right Ascension.			Var. of R. A. for 1 Day.			Apparent Declination.			Var. of Decl. for 1 Day.			Meridian Passage.	Month and Day.	Apparent Right Ascension.			Var. of R. A. for 1 Day.			Apparent Declination.			Var. of Decl. for 1 Day.			Meridian Passage.		
	Noon.			Noon.			Noon.			Noon.					Noon.			Noon.			Noon.			Noon.					
Jan.	1	h	m	s	s	°	'	"	"	h	m				July	4	h	m	s	s	°	'	"	"	h	m			
	5	5	9	37.15	-6.583	+21	30	16.6	-6.37	10	22.3				8	5	20	39.06	+9.073	+21	48	40.5	+8.06	22	26.1				
	9	5	9	11.36	-6.304	21	29	52.1	-5.85	10	6.2				12	5	21	14.95	8.868	21	49	11.8	-7.59	22	11.0				
	13	5	8	46.74	-5.990	21	29	29.8	-5.31	9	50.0				16	5	21	49.97	8.696	21	49	41.2	-7.10	21	55.8				
	17	5	8	23.48	-5.631	21	29	9.6	-4.77	9	33.9				20	5	22	24.00	8.373	21	50	8.6	-6.59	21	40.6				
	21	5	8	1.74	-5.234	21	28	51.6	-4.17	9	17.8				24	5	22	56.92	8.083	21	50	33.9	-6.07	21	25.4				
	25	5	7	41.64	-4.815	+21	28	36.2	-3.53	9	1.7				28	5	23	28.63	+7.767	+21	50	57.2	+5.56	21	10.2				
	29	5	7	23.26	-4.366	21	28	23.4	-2.85	8	45.7				Aug.	1	5	23	59.02	7.421	21	51	18.4	-5.02	20	55.0			
	Feb.	2	5	7	6.76	-3.880	21	28	13.4	-2.11	8	29.7				5	5	24	27.96	7.046	21	51	37.4	-4.49	20	39.8			
	6	5	6	52.26	-3.365	21	28	6.5	-1.34	8	13.7				9	5	24	55.35	6.642	21	51	54.3	-3.96	20	24.5				
	10	5	6	39.86	-2.835	21	28	2.7	-0.59	7	57.8				13	5	25	21.07	6.217	21	52	9.1	-3.42	20	9.2				
	14	5	6	29.60	-2.288	+21	28	1.8	+0.16	7	41.9				17	5	25	45.06	+5.772	+21	52	21.7	+2.89	19	53.8				
	18	5	6	21.58	-1.723	21	28	4.0	-0.96	7	26.1				21	5	26	7.22	5.307	21	52	32.2	-2.36	19	38.4				
	22	5	6	15.83	-1.151	21	28	9.5	-1.76	7	10.3				25	5	26	27.48	4.818	21	52	40.6	-1.84	19	23.0				
	26	5	6	12.38	-0.571	21	28	18.1	-2.55	6	54.5				29	5	26	45.74	4.311	21	52	46.9	-1.31	19	7.6				
	Mar.	2	5	6	11.27	+0.017	21	28	29.9	-3.36	6	38.7				6	5	27	1.94	3.784	21	52	51.1	-0.80	18	52.2			
	6	5	6	12.52	+0.607	+21	28	45.0	+4.14	6	23.0				10	5	27	15.98	+3.241	+21	52	53.3	+0.30	18	36.7				
	10	5	6	16.13	1.198	21	29	3.0	-4.87	6	7.4				14	5	27	27.86	2.692	21	52	53.5	-0.20	18	21.1				
	14	5	6	22.10	1.784	21	29	24.0	-5.61	5	51.8				18	5	27	37.51	2.132	21	52	51.7	-0.67	18	5.5				
	18	5	6	30.39	2.361	21	29	47.9	-6.31	5	36.2				22	5	27	44.90	1.561	21	52	48.1	-1.15	17	49.9				
	22	5	6	40.97	2.926	21	30	14.5	-6.99	5	20.6				26	5	27	49.99	0.985	21	52	42.5	-1.62	17	34.3				
	26	5	6	53.78	+3.479	+21	30	43.8	+7.62	5	5.1				30	5	27	52.78	+0.408	+21	52	35.1	-2.07	17	18.6				
	30	5	7	8.79	4.022	21	31	15.5	-8.21	4	49.6				Oct.	4	5	27	53.25	-0.170	21	52	25.9	-2.49	17	2.9			
	Apr.	3	5	7	25.94	4.551	21	31	49.5	-8.79	4	34.2				8	5	27	51.42	0.750	21	52	15.2	-2.90	16	47.1			
	7	5	7	45.17	5.060	21	32	25.8	-9.31	4	18.8				12	5	27	47.26	1.325	21	52	2.7	-3.30	16	31.3				
	11	5	8	6.39	5.548	21	33	4.0	-9.76	4	3.4				16	5	27	40.84	1.885	21	51	48.8	-3.66	16	15.5				
	15	5	8	29.52	+6.012	+21	33	43.9	+10.17	3	48.0				20	5	27	32.20	-2.432	+21	51	33.4	-4.05	15	59.6				
	19	5	8	54.45	6.450	21	34	25.4	-10.55	3	32.7				24	5	27	21.40	-2.968	21	51	16.4	-4.40	15	43.7				
	23	5	9	21.09	6.865	21	35	8.3	-10.85	3	17.4				28	5	27	8.49	-3.487	21	50	58.2	-4.72	15	27.7				
	27	5	9	49.34	7.257	21	35	52.2	-11.11	3	2.2				31	5	26	53.53	-3.991	21	50	38.6	-5.04	15	11.7				
	May	1	5	10	19.11	7.623	21	36	37.2	-11.34	2	47.0				4	5	26	36.60	-4.466	21	50	17.9	-5.30	14	55.7			
	5	5	10	50.29	+7.961	+21	37	22.9	+11.49	2	31.7				8	5	26	17.84	-4.910	+21	49	56.2	-5.56	14	39.7				
	9	5	11	22.76	8.268	21	38	9.1	-11.59	2	16.5				12	5	25	57.36	-5.325	21	49	33.4	-5.80	14	23.6				
	13	5	11	56.39	8.543	21	38	55.6	-11.65	2	1.4				16	5	25	35.28	-5.707	21	49	9.8	-5.98	14	7.5				
	17	5	12	31.06	8.786	21	39	42.3	-11.65	1	46.2				20	5	25	11.75	-6.052	21	48	45.6	-6.15	13	51.4				
	21	5	13	6.64	8.998	21	40	28.8	-11.60	1	31.1				24	5	24	46.91	-6.362	21	48	20.6	-6.32	13	35.3				
	25	5	13	43.01	+9.182	+21	41	15.1	+11.52	1	16.0				28	5	24	20.90	-6.633	+21	47	55.0	-6.40	13	19.1				
	29	5	14	20.06	9.338	21	42	1.0	-11.39	1	0.9				31	5	23	53.88	-6.864	21	47	29.4	-6.44	13	2.9				
	June	2	5	14	57.67	9.460	21	42	46.2	-11.21	0	45.8				4	5	23	26.05	-7.044	21	47	3.5	-6.49	12	46.7			
	6	5	15	35.69	9.545	21	43	30.7	-11.00	0	30.7				7	5	22	57.59	-7.178	21	46	37.5	-6.46	12	30.5				
	10	5	16	13.99	9.599	21	44	14.2	-10.74	0	15.6				11	5	22	28.69	-7.265	21	46	11.8	-6.41	12	14.3				
	14	5	16	52.44	+9.619	+21	44	56.6	+10.44	0	0.5				15	5	21	59.53	-7.306	+21	45	46.2	-6.32	11	58.1				
	18	5	17	30.90	9.606	21	45	37.7	-10.10	23	41.6				19	5	21	30.30	-7.303	21	45	21.1	-6.19	11	41.9				
	22	5	18	9.25	9.565	21	46	17.4	-9.74	23	26.5				23	5	21	1.17	-7.252	21	44	56.7	-5.99	11	25.7				
	26	5	18	47.38	9.492	21	46	55.6	-9.36	23	11.4				27	5	20	32.35	-7.151	21	44	33.2	-5.76	11	9.5				
	30	5	19	25.14	9.384	21	47	32.3	-8.95	22	56.3				31	5	20	4.03	-7.000	22	44	10.6	-5.50	10	53.3				
	July	4	5	20	2.41	+9.246	+21	48	7.3	+8.52	22	41.2				5	5	19	36.41	-6.803	+21	43	49.2	-5.17	10	37.1			
	8	5	20	39.06	+9.073	+21	48	40.5	+8.06	22	26.1				9	5	19	9.66		+21	43	29.2		10	20.9				

Greatest semidiameter,
Least semidiameter,

December 12, = 1".33
June 11, = 1".25

Greatest horizontal parallax, December 12, = 0".31
Least horizontal parallax, June 11, = 0".29

MERCURY.								
GREENWICH MEAN NOON.								
Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
Jan. -1	350 2 23.8	4 30 23.1	-11 43.7	-5 53 11.1	+17 52.0	9.5628732	0.0630698	0.0548842
1	359 20 7.7	4 47 31.6	12 48.3	5 11 50.2	23 32.6	9.5490191	0.0462082	0.0370251
3	9 13 4.6	5 5 31.5	12 29.2	4 18 51.1	29 27.2	9.5352785	0.0273213	0.0170885
5	19 42 23.0	5 23 45.2	10 32.4	3 14 8.0	35 11.8	9.5221567	0.0063252	9.9950390
7	30 47 37.9	5 41 17.5	6 57.7	1 58 34.0	40 11.3	9.5102659	9.9832496	9.9709906
9	42 26 17.7	5 56 56.9	-2 5.7	-0 34 22.1	+43 41.9	9.5002892	9.9583145	9.9452948
11	54 33 14.9	6 9 20.6	+3 19.1	+0 54 44.0	44 58.4	9.4929099	9.9320306	9.9186472
13	67 0 35.3	6 17 7.6	8 15.7	2 23 40.8	43 28.9	9.4887045	9.9052994	9.8921699
15	79 37 59.6	6 19 17.0	11 41.3	3 46 44.1	39 6.6	9.4880311	9.8794679	9.8674220
17	92 13 41.6	6 15 25.1	12 52.3	4 58 29.3	32 18.0	9.4909496	9.8562731	9.8462595
19	104 35 52.9	6 5 53.8	+11 39.0	+5 54 52.3	+23 54.0	9.4972065	9.8376036	9.8304971
21	116 34 11.9	5 51 46.1	8 26.1	6 33 43.7	14 57.5	9.5062938	9.8250841	9.8214516
23	128 0 50.7	5 34 28.8	+4 0.1	6 54 57.8	+6 24.0	9.5175547	9.8196224	9.8195578
25	138 51 0.6	5 15 31.8	-0 46.8	7 0 0.0	-1 9.7	9.5302954	9.8211614	9.8242919
27	149 2 43.9	4 56 13.5	5 11.5	6 51 11.4	7 25.7	9.5438713	9.8287766	9.8344277
29	158 36 19.2	4 37 31.6	-8 45.1	+6 31 13.2	-12 19.9	9.5577351	9.8410493	9.8484536
31	167 33 39.7	4 20 3.5	11 13.6	6 2 41.1	16 0.8	9.5714545	9.8564657	9.8649282
Feb. 2	175 57 36.4	4 4 9.9	12 34.0	5 27 52.2	18 38.7	9.5847055	9.8737040	9.8826755
4	183 51 27.8	3 49 58.8	12 51.0	4 48 40.1	20 26.0	9.5972569	9.8917444	9.9008300
6	191 18 40.4	3 37 30.5	12 13.7	4 6 34.8	21 33.6	9.6089514	9.9098682	9.9188076
8	198 22 35.4	3 26 40.4	-10 52.5	+3 22 45.7	-22 11.1	9.6196864	9.9276080	9.9362391
10	205 6 22.8	3 17 21.6	8 58.0	2 38 5.5	22 25.8	9.6294004	9.9446786	9.9529104
12	211 32 57.9	3 9 27.0	6 40.2	1 53 13.5	22 23.8	9.6380586	9.9609238	9.9687122
14	217 45 1.9	3 2 49.2	4 8.4	1 8 38.8	22 9.0	9.6456458	9.9762720	9.9836022
16	223 45 1.3	2 57 21.4	-1 30.5	+0 24 43.6	21 44.8	9.6521582	9.9907039	9.9975800
18	229 35 10.3	2 52 57.8	+1 7.0	-0 18 15.7	-21 13.5	9.6575988	0.0042339	0.0106702
20	235 17 32.1	2 49 33.5	3 38.5	1 0 6.7	20 36.6	9.6619749	0.0168942	0.0229110
22	240 54 1.3	2 47 4.6	5 58.7	1 40 39.0	19 54.9	9.6652943	0.0287265	0.0343459
24	246 26 25.9	2 45 28.3	8 3.9	2 19 43.5	19 8.9	9.6675641	0.0397754	0.0450208
26	251 56 28.1	2 44 42.4	9 50.2	2 57 11.9	18 18.8	9.6687904	0.0500870	0.0549795
28	257 25 48.0	2 44 45.6	+11 14.4	-3 32 55.6	-17 24.2	9.6689755	0.0597033	0.0642633
Mar. 2	262 56 3.1	2 45 37.7	12 13.9	4 6 45.4	16 24.7	9.6681205	0.0686635	0.0729083
4	268 28 51.6	2 47 19.2	12 46.5	4 38 30.5	15 19.4	9.6662233	0.0770015	0.0809464
6	274 5 53.5	2 49 51.2	12 50.2	5 7 58.3	14 7.2	9.6632788	0.0847457	0.0884022
8	279 48 51.6	2 53 15.9	12 23.7	5 34 53.4	12 46.4	9.6592804	0.0919178	0.0952938
10	285 39 34.1	2 57 36.2	+11 26.5	-5 58 57.2	-11 15.5	9.6542197	0.0985317	0.1016321
12	291 39 55.6	3 2 55.6	9 58.0	6 19 47.2	9 32.2	9.6480900	0.1045945	0.1074183
14	297 51 58.9	3 9 18.8	7 59.3	6 36 55.9	7 33.8	9.6408860	0.1101023	0.1126448
16	304 17 56.4	3 16 50.5	5 32.8	6 49 50.1	5 17.1	9.6326085	0.1150429	0.1172928
18	311 0 10.4	3 25 36.4	+2 42.8	6 57 49.9	-2 38.8	9.6232681	0.1193902	0.1213299
20	318 1 15.5	3 35 42.4	-0 24.3	-7 0 8.4	+0 25.0	9.6128917	0.1231055	0.1247098
22	325 23 56.9	3 47 13.5	3 39.6	6 55 50.6	3 58.0	9.6015301	0.1261341	0.1273691
24	333 11 8.9	4 0 13.4	6 49.7	6 43 54.8	8 3.6	9.5892700	0.1284039	0.1292262
26	341 25 50.6	4 14 43.2	9 38.4	6 23 13.3	12 43.7	9.5762465	0.1298222	0.1301770
28	350 10 59.0	4 30 38.6	11 45.4	5 52 37.7	17 57.2	9.5626629	0.1302741	0.1300957
30	359 29 14.7	4 47 47.9	-12 48.8	-5 11 6.2	+23 38.1	9.5488076	0.1296224	0.1288333
32	9 22 45.2	5 5 48.7	-12 28.2	-4 17 56.1	+29 32.7	9.5350728	0.1277068	0.1262199

MERCURY.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Interme- diate Date.
Apr.	1 9 22 45.2	5 5 48.7	-12 28.2	-4 17 56.1	+29 32.7	9.5350728	0.1277068	0.1262199
	3 19 52 37.4	5 24 1.8	10 30.0	3 13 2.3	35 16.9	9.5219652	0.1243494	0.1220717
	5 30 58 24.2	5 41 32.7	6 53.6	1 57 19.0	40 15.4	9.5100987	0.1193634	0.1162021
	7 42 37 32.6	5 57 9.6	-2 0.8	-0 33 0.7	43 44.1	9.5001570	0.1125673	0.1084411
	9 54 44 51.7	6 9 29.8	+3 24.4	+0 56 7.5	44 58.4	9.4928224	0.1038070	0.0986547
	11 67 12 26.2	6 17 12.0	+8 19.9	+2 25 1.5	+43 26.2	9.4886689	0.0929776	0.0867742
	13 79 49 53.6	6 19 15.8	11 43.6	3 47 56.7	39 1.3	9.4880512	0.0800480	0.0728076
	15 92 25 28.0	6 15 18.4	12 52.2	4 59 29.1	32 10.5	9.4910232	0.0650678	0.0568479
	17 104 47 20.9	6 5 42.3	11 36.9	5 55 35.9	23 45.8	9.4973276	0.0481704	0.0390628
	19 116 45 13.5	5 51 31.3	8 22.3	6 34 11.3	14 49.4	9.5064530	0.0295548	0.0196780
	21 128 11 20.1	5 34 11.6	+3 55.5	+6 55 9.5	+6 16.4	9.5177413	0.0094659	9.9989529
	23 139 0 54.5	5 15 13.8	-0 51.1	6 59 57.7	-1 16.1	9.5304990	9.9881736	9.9771631
	25 149 12 2.0	4 55 55.7	5 15.2	6 50 57.6	7 30.4	9.5440828	9.9659562	9.9545880
	27 158 45 2.5	4 37 14.8	8 48.1	6 30 50.3	12 23.9	9.5579471	9.9430937	9.9315091
	29 167 41 50.9	4 19 48.0	11 15.4	6 2 11.4	16 3.6	9.5716610	9.9198703	9.9082135
May	1 176 5 18.2	4 3 56.0	-12 24.7	+5 27 17.7	-18 40.7	9.5849023	9.8965772	9.8850002
	3 183 58 43.5	3 49 46.6	12 50.8	4 48 2.3	20 27.3	9.5974414	9.8735231	9.8621888
	5 191 25 32.9	3 37 19.7	12 12.7	4 5 54.9	21 34.4	9.6091215	9.8510425	9.8401317
	7 198 29 7.8	3 26 31.0	10 50.8	3 22 4.7	22 11.5	9.6198411	9.8295060	9.8192168
	9 205 12 38.0	3 17 13.7	8 56.0	2 37 24.0	22 26.0	9.6295389	9.8093183	9.7998661
	11 211 38 58.5	3 9 20.3	-6 38.0	+1 52 32.1	-22 23.7	9.6381807	9.7909172	9.7825293
	13 217 50 50.3	3 2 43.7	4 6.0	1 7 58.1	22 8.7	9.6457514	9.7747590	9.7676614
	15 223 50 40.0	2 57 17.0	-1 28.1	+0 24 3.6	21 44.5	9.6522472	9.7612893	9.7556911
	17 229 40 41.1	2 52 54.2	+1 9.2	-0 18 55.0	21 13.0	9.6576717	9.7509112	9.7469849
	19 235 22 56.5	2 49 30.8	3 40.7	1 0 44.9	20 36.0	9.6620315	9.7439409	9.7417997
	21 240 59 21.2	2 47 2.9	+6 1.0	-1 41 15.9	-19 54.2	9.6653347	9.7405718	9.7402580
	23 246 31 43.0	2 45 27.3	8 5.7	2 20 19.0	19 8.2	9.6675886	9.7408494	9.7423277
	25 252 1 44.1	2 44 42.0	9 51.6	2 57 45.9	18 18.0	9.6687990	9.7446663	9.7478306
	27 257 31 4.0	2 44 46.0	11 15.6	3 33 27.9	17 23.3	9.6689686	9.7517802	9.7564692
	29 263 1 20.9	2 45 38.9	12 14.7	4 7 15.9	16 23.8	9.6680981	9.7618471	9.7678624
	31 268 34 12.6	2 47 21.1	+12 46.8	-4 38 59.0	-15 18.3	9.6661853	9.7744622	9.7815923
June	2 274 11 19.0	2 49 53.9	12 50.1	5 8 24.5	14 5.9	9.6632251	9.7892008	9.7972363
	4 279 54 23.3	2 53 19.4	12 23.1	5 35 17.0	12 45.1	9.6592109	9.8056494	9.8143943
	6 285 45 13.7	2 57 40.5	11 25.2	5 59 18.1	11 14.1	9.6541345	9.8234274	9.8327079
	8 291 45 44.8	3 3 0.9	9 56.2	6 20 4.9	9 30.5	9.6479891	9.8421976	9.8518624
	10 297 57 59.6	3 9 24.9	+7 57.2	-6 37 9.9	-7 31.8	9.6407692	9.8616700	9.8715905
	12 304 24 10.3	3 16 57.7	5 30.4	6 49 59.8	5 14.8	9.6324761	9.8815974	9.8916650
	14 311 6 39.9	3 25 44.9	+2 40.0	6 57 54.8	-2 36.2	9.6231201	9.9017704	9.9118919
	16 318 8 3.2	3 35 52.2	-0 27.4	7 0 7.6	+0 28.0	9.6127288	9.9220091	9.9321025
	18 325 31 5.2	3 47 24.3	3 42.6	6 55 43.3	4 1.5	9.6013531	9.9421538	9.9521447
	20 333 18 39.7	4 0 25.4	-6 52.4	-6 43 39.9	+8 7.6	9.5890806	9.9620578	9.9718752
	22 341 33 47.0	4 14 56.5	9 40.7	6 22 50.0	12 48.2	9.5760472	9.9815790	9.9911509
	24 350 19 22.9	4 30 53.1	11 46.8	5 52 4.9	18 2.2	9.5624576	0.0005719	0.0098222
	26 359 38 8.7	4 48 3.7	12 49.1	5 10 23.1	23 43.4	9.5486008	0.0188807	0.0277257
	28 9 32 10.7	5 6 4.4	12 27.2	4 17 2.4	29 37.9	9.5348717	0.0363346	0.0446833
	30 20 2 34.7	5 24 17.5	-10 27.4	-3 11 58.4	+35 21.8	9.5217783	0.0527466	0.0604992
	32 31 8 52.0	5 41 47.3	-6 49.8	-1 56 6.2	+40 19.2	9.5099356	0.0679150	0.0749677

MERCURY.									
GREENWICH MEAN NOON.									
Date.		Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
								At Date.	At Intermediate Date.
July	2	31 8 52.0	5 41 47.3	- 6 49.8	-1 56 6.2	+40 19.2	9.5099356	0.0679150	0.0749677
	4	42 48 27.2	5 57 22.0	- 1 55.9	-0 31 41.8	43 46.4	9.5000282	0.0816323	0.0878839
	6	54 56 7.9	6 9 38.6	+ 3 29.1	+0 57 28.8	44 38.5	9.4927377	0.0937010	0.0990633
	8	67 23 55.1	6 17 16.1	8 23.8	2 26 19.6	43 23.3	9.4886354	0.1039547	0.1083627
	10	80 1 25.8	6 19 14.8	11 45.7	3 49 6.7	38 56.2	9.4880719	0.1122798	0.1157028
	12	92 36 52.7	6 15 12.0	+12 52.1	+5 0 26.9	+32 3.4	9.4910966	0.1186338	0.1210791
	14	104 58 28.1	6 5 31.4	11 34.7	5 56 18.4	23 37.8	9.4974474	0.1230491	0.1245589
	16	116 55 55.4	5 51 16.9	8 18.7	6 34 37.8	14 41.5	9.5066101	0.1256253	0.1262687
	18	128 21 30.9	5 33 55.3	+ 3 51.4	6 55 20.7	+ 6 9.2	9.5179252	0.1265109	0.1263738
	20	139 10 32.1	5 14 56.8	- 0 55.3	6 59 55.4	- 1 22.3	9.5306995	0.1258804	0.1250534
	22	149 21 5.6	4 55 39.0	- 5 18.9	+6 50 44.0	- 7 35.4	9.5442906	0.1239147	0.1224853
	24	158 53 33.4	4 36 58.8	8 50.7	6 30 27.9	18 27.7	9.5581550	0.1207852	0.1188327
	26	167 49 51.0	4 19 33.5	11 17.1	6 1 42.3	16 6.5	9.5718636	0.1166449	0.1142376
	28	176 12 50.7	4 3 42.9	12 35.4	5 26 43.8	18 42.7	9.5850955	0.1116249	0.1088196
	30	184 5 51.2	3 49 34.8	12 50.6	4 47 25.1	20 28.6	9.5976223	0.1058328	0.1026744
Aug.	1	191 32 18.8	3 37 9.6	-12 11.8	+4 5 15.5	-21 35.2	9.6092885	0.0993538	0.0958782
	3	198 35 35.0	3 26 22.3	10 49.4	3 21 24.1	22 11.9	9.6199931	0.0922540	0.0884867
	5	205 18 48.9	3 17 6.2	8 54.1	2 36 43.0	22 26.0	9.6296753	0.0845807	0.0805402
	7	211 44 55.8	3 9 14.0	6 35.8	1 51 51.0	22 23.4	9.6383011	0.0763684	0.0720674
	9	217 56 36.0	3 2 38.4	4 3.7	1 7 17.4	22 8.4	9.6458557	0.0676386	0.0630826
	11	223 56 15.9	2 57 12.7	- 1 25.7	+0 23 23.6	-21 44.0	9.6523354	0.0584002	0.0535912
	13	229 46 9.4	2 52 51.0	+ 1 11.6	-0 19 34.0	21 12.6	9.6577441	0.0486549	0.0435901
	15	235 28 19.2	2 49 28.4	3 42.9	1 1 22.9	20 35.4	9.6620883	0.0383960	0.0330704
	17	241 4 39.7	2 47 1.2	6 2.9	1 41 52.6	19 53.6	9.6653758	0.0276111	0.0220161
	19	246 36 58.7	2 45 26.4	8 7.4	2 20 54.3	19 7.5	9.6676140	0.0162826	0.0104084
	21	252 6 58.6	2 44 41.8	+ 9 53.1	-2 58 19.7	-18 17.2	9.6688088	0.0043909	9.9982272
	23	257 36 18.9	2 44 46.6	11 16.6	3 34 0.1	17 22.4	9.6689629	9.9919153	9.9854529
	25	263 6 37.4	2 45 40.1	12 15.4	4 7 46.2	16 22.8	9.6680768	9.9788384	9.9720706
	27	268 39 32.2	2 47 23.1	12 47.1	4 39 27.3	15 17.2	9.6661483	9.9651496	9.9580753
	29	274 16 43.4	2 49 56.6	12 49.9	5 8 50.5	14 4.8	9.6631723	9.9508503	9.9434782
Sept.	31	279 59 53.8	2 53 22.8	+12 22.5	-5 35 40.6	-12 43.8	9.6591421	9.9359648	9.9283180
	2	285 50 52.0	2 57 44.9	11 24.1	5 59 38.8	11 12.6	9.6540496	9.9205481	9.9126703
	4	291 51 33.0	3 3 6.3	9 54.6	6 20 22.4	9 28.8	9.6478878	9.9047044	9.8966732
	6	298 3 59.5	3 9 31.3	7 55.1	6 37 23.8	7 29.8	9.6406517	9.8886069	9.8805430
	8	304 30 24.0	3 17 5.1	5 27.9	6 50 9.4	5 12.6	9.6323423	9.8725254	9.8646089
	10	311 13 9.7	3 25 53.6	+ 2 37.3	-6 57 59.6	- 2 33.6	9.6229703	9.8568577	9.8493471
	12	318 14 51.5	3 36 2.0	- 0 30.4	7 0 6.7	+ 0 31.0	9.6125636	9.8421641	9.8354079
	14	325 38 14.3	3 47 35.6	3 45.4	6 55 35.9	4 5.0	9.6011735	9.8291900	9.8236319
	16	333 26 13.1	4 0 38.0	6 55.2	6 43 24.9	8 11.6	9.5888881	9.8188642	9.8150223
	18	341 41 46.8	4 15 10.5	9 42.9	6 22 26.3	12 52.8	9.5758445	9.8122413	9.8106511
	20	350 27 52.4	4 31 8.5	-11 48.3	-5 51 31.6	+18 7.2	9.5622479	9.8103680	9.8114877
	22	359 47 9.9	4 48 20.0	12 49.5	5 9 39.4	23 48.7	9.5483900	9.8140784	9.8181732
	24	9 41 45.0	5 6 21.0	12 26.1	4 16 7.8	29 43.4	9.5346661	9.8237669	9.8308148
	26	20 12 42.1	5 24 33.9	10 24.6	3 10 53.2	35 26.8	9.5215868	9.8392327	9.8489025
	28	31 19 31.6	5 42 2.8	6 45.5	1 54 51.9	40 23.2	9.5097681	9.8596779	9.8713903
30	42 59 35.7	5 57 35.3	- 1 51.0	-0 30 21.1	+43 48.5	9.4998955	9.8838618	9.8969071	
32	55 7 39.3	6 9 47.9	+ 3 33.8	+0 58 51.5	+44 59.6	9.4926496	9.9103445	9.9240021	

MERCURY.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							Date.	At Intermediate Date.
Oct. 2	55 7 39.3	6 9 47.9	+ 3 33.8	+0 58 51.5	+44 59.6	9.4926496	9.9103445	9.9240021
4	67 35 40.3	6 17 20.6	8 27.8	2 27 39.5	43 20.5	9.4885995	9.9377197	9.9513549
6	80 13 14.8	6 19 14.4	11 47.8	3 50 18.4	38 50.8	9.4880908	9.9647838	9.9779015
8	92 48 34.4	6 15 5.8	12 52.0	5 1 25.9	31 56.2	9.4911690	9.9906227	0.0028808
10	105 9 52.5	6 5 20.3	11 32.4	5 57 1.9	23 29.7	9.4975671	0.0146266	0.0258261
12	117 6 53.3	5 51 2.1	+ 8 15.2	+6 35 4.8	+14 33.4	9.5067678	0.0364589	0.0465162
14	128 31 57.4	5 33 38.6	+ 3 47.0	6 55 32.0	+ 6 1.7	9.5181104	0.0559985	0.0649135
16	139 20 23.8	5 14 39.1	- 0 59.6	6 59 52.8	- 1 29.0	9.5309018	0.0732748	0.0811005
18	149 30 21.7	4 55 21.3	5 22.6	6 50 30.0	7 40.8	9.5445010	0.0884108	0.0952284
20	159 2 15.2	4 36 42.2	8 53.6	6 30 4.8	12 31.7	9.5583661	0.1015766	0.1074791
22	167 58 0.8	4 19 18.0	-11 18.9	+6 1 12.5	-16 9.3	9.5720697	0.1129590	0.1180389
24	176 20 31.1	4 3 29.1	12 36.1	5 26 9.2	28 44.7	9.5852927	0.1227404	0.1270844
26	184 13 5.8	3 49 22.7	12 50.4	4 46 47.2	20 29.9	9.5978078	0.1310907	0.1347770
28	191 39 10.4	3 36 59.2	12 10.9	4 4 35.7	21 56.0	9.6094602	0.1381597	0.1412546
30	198 42 6.7	3 26 13.1	10 47.9	3 20 43.1	22 12.3	9.6201499	0.1440775	0.1466414
Nov. 1	205 25 3.3	3 16 58.1	- 8 52.2	+2 36 1.5	-22 26.1	9.6298164	0.1489571	0.1510359
3	211 50 55.2	3 9 7.2	6 33.5	1 51 9.8	22 23.3	9.6384262	0.1528881	0.1545227
5	218 2 23.3	3 2 32.9	4 1.4	1 6 36.6	22 8.1	9.6459647	0.1559478	0.1571703
7	224 1 53.1	2 57 8.1	- 1 23.2	+0 22 43.5	21 43.6	9.6524283	0.1581968	0.1590330
9	229 51 38.3	2 52 47.4	+ 1 14.2	-0 20 13.2	21 12.0	9.6578208	0.1596839	0.1601532
11	235 33 41.9	2 49 25.7	+ 3 45.2	-1 2 0.8	-20 34.8	9.6621488	0.1604437	0.1605596
13	241 9 58.0	2 46 59.3	6 4.9	1 42 29.3	19 52.9	9.6654203	0.1605030	0.1602751
15	246 42 14.0	2 45 25.3	8 9.2	2 21 29.6	19 6.7	9.6676426	0.1598772	0.1593096
17	252 12 12.6	2 44 41.5	9 54.5	2 58 53.4	18 16.4	9.6688214	0.1585723	0.1576651
19	257 41 32.9	2 44 46.9	11 17.7	3 34 32.1	17 21.5	9.6689593	0.1565866	0.1553351
21	263 11 53.0	2 45 41.4	+12 16.1	-4 8 16.3	-16 21.8	9.6680570	0.1539086	0.1523044
23	268 44 51.2	2 47 25.1	12 47.3	4 39 55.4	15 16.2	9.6661122	0.1505197	0.1485502
25	274 22 7.0	2 49 59.4	12 49.7	5 9 16.5	14 3.6	9.6631197	0.1463917	0.1440394
27	280 5 23.8	2 53 26.5	12 21.8	5 36 4.1	12 42.5	9.6590729	0.1414879	0.1387308
29	285 56 30.1	2 57 49.4	11 22.9	5 59 59.5	11 11.0	9.6539637	0.1357613	0.1325719
Dec. 1	291 57 20.8	3 3 11.6	+ 9 53.0	-6 20 39.9	- 9 27.1	9.6477850	0.1291542	0.1254994
3	298 9 59.1	3 9 37.7	7 53.1	6 37 37.6	7 27.8	9.6405319	0.1215973	0.1174373
5	304 36 37.7	3 17 12.8	5 25.4	6 50 19.0	5 10.3	9.6322055	0.1130083	0.1082972
7	311 19 39.9	3 26 2.2	+ 2 34.5	6 58 4.2	- 2 31.0	9.6228169	0.1032910	0.0979753
9	318 21 40.2	3 36 11.9	- 0 33.3	7 0 5.7	+ 0 34.0	9.6123941	0.0923343	0.0863524
11	325 45 24.5	3 47 47.0	- 3 48.4	-6 55 28.3	+ 4 8.6	9.6009891	0.0800128	0.0732971
13	333 33 47.8	4 0 51.2	6 58.0	6 43 9.7	8 15.7	9.5886904	0.0661880	0.0586677
15	341 49 49.0	4 15 24.8	9 45.2	6 22 2.5	12 57.3	9.5756363	0.0507176	0.0423203
17	350 36 24.2	4 31 23.9	11 49.8	5 50 58.1	18 12.3	9.5620329	0.0334602	0.0241243
19	359 56 13.7	4 48 36.2	12 49.8	5 8 55.2	23 54.2	9.5481736	0.0143027	0.0039917
21	9 51 22.6	5 6 38.2	-12 25.1	-4 15 12.5	+29 48.8	9.5344554	9.9931945	9.9819233
23	20 22 54.0	5 24 50.8	10 22.1	3 9 47.5	35 31.8	9.5213905	9.9702032	9.9580766
25	31 30 16.2	5 42 18.4	6 41.5	1 53 37.0	40 27.3	9.5095963	9.9456058	9.9328763
27	43 30 49.5	5 57 48.5	- 1 46.1	-0 28 59.8	43 50.8	9.4997593	9.9200000	9.9071198
29	55 19 15.9	6 9 57.4	+ 3 39.0	+1 0 14.9	44 58.0	9.4925589	9.8944123	9.8820849
31	67 47 31.4	6 17 25.4	+ 8 31.9	+2 29 0.0	+43 17.7	9.4885616	9.8703743	9.8595364
33	80 25 10.0	6 29 13.1	+11 49.9	+3 51 30.6	+38 45.5	9.4881092	9.8498349	9.8415237

VENUS.								
GREENWICH MEAN NOON.								
Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
Jan. 1	29 16 47.8	1 35 54.0	-3 0.8	-2 27 42.9	+3 54.5	9.8598753	0.0115411	0.0057991
5	35 40 36.1	1 36 0.3	2 58.4	2 11 11.0	4 21.0	9.8595492	9.9999404	9.9939619
9	42 4 50.4	1 36 6.9	2 47.1	1 52 59.4	4 44.3	9.8592198	9.9878589	9.9816290
13	48 29 31.4	1 36 13.6	2 27.5	1 33 21.5	5 4.1	9.8588912	9.9752685	9.9687750
17	54 54 39.7	1 36 20.6	2 0.4	1 12 31.6	5 20.2	9.8585676	9.9621454	9.9553773
21	61 20 16.0	1 36 27.6	-1 27.4	-0 50 45.3	+5 32.3	9.8582532	9.9484668	9.9414106
25	67 46 20.8	1 36 34.8	0 49.9	0 28 18.8	5 40.2	9.8579519	9.9342039	9.9268418
29	74 12 54.3	1 36 42.0	-0 9.8	-0 5 29.0	5 43.9	9.8576676	9.9193192	9.9116296
Feb. 2	80 39 56.6	1 36 49.2	+0 30.9	+0 17 26.7	5 43.2	9.8574040	9.9037670	9.8957254
6	87 7 27.5	1 36 56.3	1 10.0	0 40 10.6	5 38.1	9.8571643	9.8874980	9.8790802
10	93 35 26.2	1 37 3.1	+1 45.6	+1 2 25.3	+5 28.6	9.8569518	9.8704659	9.8616502
14	100 3 51.5	1 37 9.5	2 15.8	1 23 53.5	5 14.8	9.8567694	9.8526283	9.8433966
18	106 32 41.5	1 37 15.4	2 39.2	1 44 18.5	4 57.0	9.8566194	9.8339503	9.8242854
22	113 1 53.9	1 37 20.7	2 54.5	2 3 24.2	4 35.2	9.8565038	9.8143961	9.8042774
26	119 31 25.9	1 37 25.1	3 0.8	2 20 55.6	4 9.9	9.8564241	9.7939234	9.7833284
Mar. 2	126 1 13.7	1 37 28.6	+2 57.9	+2 36 38.8	+3 41.2	9.8563814	9.7724859	9.7613906
6	132 31 13.2	1 37 30.9	2 45.9	2 50 21.6	3 9.8	9.8563762	9.7500376	9.7384250
10	139 1 19.8	1 37 32.1	2 25.4	3 1 53.0	2 35.6	9.8564086	9.7265519	9.7144192
14	145 31 28.4	1 37 31.9	1 57.4	3 11 4.1	1 59.6	9.8564783	9.7020323	9.6893996
18	152 1 33.5	1 37 30.4	1 23.4	3 17 48.0	1 22.1	9.8565842	9.6765323	9.6634461
22	158 31 29.5	1 37 27.4	+0 45.2	+3 21 59.5	+0 43.5	9.8567252	9.6501617	9.6367039
26	165 1 10.9	1 37 23.1	+0 4.7	3 23 35.5	+0 4.4	9.8568994	9.6231039	9.6094003
30	171 30 32.2	1 37 17.4	-0 36.0	3 22 35.2	-0 34.6	9.8571041	9.5956400	9.5818807
Apr. 3	177 59 28.1	1 37 10.4	1 14.9	3 18 59.8	1 13.0	9.8573371	9.5681947	9.5546689
7	184 27 53.7	1 37 2.3	1 49.9	3 12 52.5	1 50.4	9.8575952	9.5414061	9.5285298
11	190 55 44.9	1 36 53.2	-2 19.2	+3 4 18.7	-2 26.2	9.8578752	9.5161784	9.5045142
15	197 22 58.1	1 36 43.3	2 41.5	2 53 25.6	3 0.0	9.8581733	9.4937100	9.4839463
19	203 49 30.6	1 36 32.9	2 55.6	2 40 22.1	3 31.3	9.8584858	9.4754095	9.4682758
23	210 15 20.4	1 36 22.0	3 1.0	2 25 18.7	3 59.8	9.8588085	9.4627077	9.4588376
27	216 40 26.3	1 36 10.9	2 57.2	2 8 27.4	4 25.2	9.8591378	9.4567628	9.4565391
May 1	223 4 48.1	1 36 0.0	-2 44.5	+1 50 1.3	-4 47.2	9.8594691	9.4581736	9.4616313
5	229 28 26.7	1 35 49.4	2 23.7	1 30 14.7	5 5.5	9.8597984	9.4668267	9.4736430
9	235 51 23.6	1 35 39.2	1 55.9	1 9 22.7	5 19.9	9.8601216	9.4819345	9.4915339
13	242 13 41.1	1 35 29.7	1 22.4	0 47 41.1	5 30.3	9.8604347	9.5022632	9.5139413
17	248 35 22.2	1 35 21.0	0 44.9	0 25 26.0	5 36.6	9.8607338	9.5263952	9.5394588
21	254 56 30.3	1 35 13.2	-0 5.2	+0 2 54.1	-5 38.8	9.8610153	9.5529821	9.5668315
25	261 17 9.6	1 35 6.6	+0 34.7	-0 19 38.4	5 36.9	9.8612757	9.5808893	9.5950547
29	267 37 24.5	1 35 1.0	1 12.9	0 41 54.9	5 30.8	9.8615120	9.6092496	9.6234053
June 2	273 57 19.5	1 34 56.6	1 47.5	1 3 39.4	5 20.8	9.8617213	9.6374687	9.6513973
6	280 16 59.3	1 34 53.4	2 16.8	1 24 36.1	5 7.0	9.8619010	9.6651581	9.6787248
10	286 36 28.6	1 34 51.4	+2 39.4	-1 44 30.2	-4 49.5	9.8620489	9.6920787	9.7052032
14	292 55 51.8	1 34 50.4	2 54.3	2 3 7.2	4 28.5	9.8621635	9.7180858	9.7307190
18	299 15 13.3	1 34 50.5	3 0.7	2 20 14.1	4 4.4	9.8622433	9.7430956	9.7552102
22	305 34 37.1	1 34 51.6	2 58.4	2 35 38.4	3 37.3	9.8622872	9.7670606	9.7786468
26	311 54 6.8	1 34 53.5	2 47.4	2 49 9.1	3 7.6	9.8622948	9.7899699	9.8010332
30	318 13 45.7	1 34 56.2	+2 28.3	-3 0 36.4	-2 35.7	9.8622662	9.8118411	9.8223993
34	324 33 36.7	1 34 59.5	+2 2.0	-3 9 52.0	-2 1.8	9.8622014	9.8327142	9.8427923

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GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
July	4 324 33 36.7	1 34 59.5	+2 2.0	-3 9 52.0	-2 1.8	9.8622014	9.8327142	9.8427923
	8 330 53 42.3	1 35 3.4	1 29.7	3 16 49.0	1 26.4	9.8621015	9.8526401	9.8622638
	12 337 14 4.6	1 35 7.8	0 53.0	3 21 22.2	0 50.0	9.8619674	9.8716692	9.8808611
	16 343 34 45.2	1 35 12.6	+0 13.8	3 23 28.1	-0 12.9	9.8618010	9.8898440	9.8986224
	20 349 55 45.6	1 35 17.7	-0 26.2	3 23 4.7	+0 24.6	9.8616040	9.9072008	9.9155827
	24 356 17 7.0	1 35 23.1	-1 4.9	-3 20 11.8	+1 1.8	9.8613789	9.9237726	9.9317749
	28 2 38 50.4	1 35 28.7	1 40.5	3 14 51.2	1 38.4	9.8611282	9.9395944	9.9472367
	Aug. 1 9 0 56.4	1 35 34.4	2 11.2	3 7 6.3	2 13.9	9.8608551	9.9547074	9.9620112
	5 15 23 25.9	1 35 40.4	2 35.4	2 57 2.3	2 47.9	9.8605628	9.9691542	9.9761413
	9 21 46 19.5	1 35 46.5	2 52.1	2 44 46.1	3 19.9	9.8602548	9.9829766	9.9896645
	13 28 9 37.9	1 35 52.7	-3 0.2	-2 30 26.3	+3 49.6	9.8599348	9.9962085	0.0026113
	17 34 33 21.6	1 35 59.2	2 59.4	2 14 13.1	4 16.6	9.8596071	0.0088753	0.0150032
	21 40 57 31.5	1 36 5.8	2 49.7	1 56 18.0	4 40.4	9.8592753	0.0209977	0.0268606
	25 47 22 8.1	1 36 12.6	2 31.5	1 36 54.2	5 0.8	9.8589437	0.0325948	0.0382033
	29 53 47 12.2	1 36 19.5	2 5.7	1 16 15.9	5 17.6	9.8586166	0.0436891	0.0490561
Sept.	2 60 12 44.4	1 36 26.6	-1. 33.5	-0 54 38.3	+5 30.5	9.8582979	0.0543074	0.0594464
	6 66 38 45.3	1 36 33.8	0 56.7	0 32 17.4	5 39.2	9.8579918	0.0644764	0.0693999
	10 73 5 15.1	1 36 41.1	-0 16.9	-0 9 30.4	5 43.6	9.8577022	0.0742196	0.0789369
	14 79 32 14.0	1 36 48.4	+0 23.8	+0 13 25.6	5 43.7	9.8574327	0.0835540	0.0880718
	18 85 59 41.7	1 36 55.5	1 3.3	0 36 13.1	5 39.3	9.8571871	0.0924921	0.0968149
	22 92 27 37.6	1 37 2.4	+1 39.6	+0 58 34.4	+5 30.6	9.8569683	0.1010425	0.1051760
	26 98 56 0.3	1 37 8.9	2 11.0	1 20 12.1	5 17.6	9.8567792	0.1092174	0.1131686
	30 105 24 48.3	1 37 15.0	2 35.7	1 40 49.5	5 0.4	9.8566224	0.1170317	0.1208091
	Oct. 4 111 53 59.3	1 37 20.4	2 52.4	2 0 10.4	4 39.3	9.8564998	0.1245030	0.1281159
	8 118 23 30.4	1 37 25.0	3 0.4	2 17 59.4	4 14.6	9.8564132	0.1316490	0.1351043
	12 124 53 18.1	1 37 28.7	+2 59.1	+2 34 2.6	+3 46.5	9.8563637	0.1384825	0.1417851
	16 131 23 18.3	1 37 31.2	2 48.6	2 48 7.4	3 15.4	9.8563519	0.1450124	0.1481650
	20 137 53 26.4	1 37 32.5	2 29.5	3 0 2.6	2 41.8	9.8563781	0.1512433	0.1542482
	24 144 23 37.3	1 37 32.6	2 2.7	3 9 38.9	2 6.0	9.8564418	0.1571807	0.1600420
	28 150 53 45.6	1 37 31.3	1 29.7	3 16 48.9	1 23.7	9.8565424	0.1628334	0.1655565
Nov.	1 157 23 45.8	1 37 28.5	+0 52.0	+3 21 27.2	+0 50.3	9.8566784	0.1682128	0.1708045
	5 163 53 32.1	1 37 24.4	+0 11.8	3 23 30.4	+0 11.3	9.8568479	0.1733326	0.1757990
	9 170 22 59.1	1 37 18.9	-0 29.0	3 22 57.3	-0 27.8	9.8570490	0.1782045	0.1805496
	13 176 52 1.4	1 37 12.1	1 8.3	3 19 48.7	1 6.4	9.8572788	0.1828351	0.1850619
	17 183 20 34.2	1 37 4.1	1 44.1	3 14 7.5	1 44.0	9.8575344	0.1872298	0.1893390
	21 189 48 33.0	1 36 55.1	-2 14.5	+3 5 58.8	-2 20.2	9.8578125	0.1913899	0.1933834
	25 196 15 54.2	1 36 45.3	2 38.2	2 55 29.4	2 51.3	9.8581095	0.1953199	0.1972008
	29 202 42 34.8	1 36 34.9	2 53.8	2 42 47.8	3 26.1	9.8584215	0.1990275	0.2008005
	Dec. 3 209 8 32.8	1 36 24.0	3 0.7	2 28 4.4	3 55.1	9.8587445	0.2025218	0.2041928
	7 215 33 46.9	1 36 13.0	2 58.5	2 11 30.9	4 21.0	9.8590746	0.2058142	0.2073866
	11 221 58 16.7	1 36 2.0	-2 47.3	+1 53 20.2	-4 43.6	9.8594074	0.2089113	0.2103879
	15 228 22 2.9	1 35 51.2	2 27.9	1 33 46.6	5 2.6	9.8597388	0.2118168	0.2131981
	19 234 45 6.9	1 35 40.9	2 1.2	1 13 4.9	5 17.7	9.8600647	0.2145318	0.2158181
	23 241 7 31.0	1 35 31.2	1 28.6	0 51 30.7	5 28.8	9.8603810	0.2170570	0.2182490
	27 247 29 17.9	1 35 22.4	0 51.6	0 29 20.3	5 35.8	9.8606840	0.2193952	0.2204963
	31 253 50 31.2	1 35 14.5	-0 12.1	+0 6 50.1	-5 38.6	9.8609698	0.2215531	0.2225668
	35 260 11 14.9	1 35 7.6	+0 27.8	-0 15 43.4	-5 37.4	9.8612350	0.2235379	0.2244674

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GREENWICH MEAN NOON.								
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							At Date.	At Intermediate Date.
	° ' "	" "	"	° ' "	"			
Jan. 1	90 17 43.0	29 17.26	+53.5	+1 13 38.2	+42.44	0.1973627	9.8059871	9.8135464
5	92 14 31.3	29 7.00	53.9	1 16 25.0	40.92	0.1986426	9.8213885	9.8294765
9	94 10 39.3	28 57.01	53.9	1 19 5.6	39.36	0.1998957	9.8377752	9.8462507
13	96 6 7.7	28 47.29	53.7	1 21 39.9	37.79	0.2011213	9.8548703	9.8636046
17	98 0 58.0	28 37.87	53.3	1 24 7.9	36.20	0.2023179	9.8724288	9.8813192
21	99 55 11.0	28 28.73	+52.7	+1 26 29.5	+34.59	0.2034850	9.8902552	9.8992187
25	101 48 48.1	28 19.89	51.8	1 28 44.6	32.97	0.2046215	9.9081927	9.9171615
29	103 41 50.4	28 11.31	50.6	1 30 53.3	31.36	0.2057265	9.9261124	9.9350315
Feb. 2	105 34 18.9	28 3.00	49.2	1 32 55.5	29.74	0.2067993	9.9439058	9.9527241
6	107 26 14.7	27 55.01	47.8	1 34 51.2	28.11	0.2078389	9.9614770	9.9701541
10	109 17 39.3	27 47.35	+46.2	+1 36 40.4	+26.47	0.2088447	9.9787482	9.9872528
14	111 8 33.8	27 39.95	44.3	1 38 23.0	24.83	0.2098162	9.9956637	0.0039772
18	112 58 59.2	27 32.85	42.2	1 39 59.0	23.19	0.2107527	0.0121904	0.0203014
22	114 48 57.0	27 26.05	39.9	1 41 28.5	21.56	0.2116534	0.0283087	0.0362118
26	116 38 28.0	27 19.53	37.6	1 42 51.5	19.92	0.2125179	0.0440084	0.0516978
Mar. 2	118 27 33.6	27 13.32	+35.1	+1 44 7.9	+18.29	0.2133458	0.0592786	0.0667492
6	120 16 15.0	27 7.44	32.4	1 45 17.8	16.67	0.2141365	0.0741077	0.0813538
10	122 4 33.5	27 1.85	29.7	1 46 21.2	15.03	0.2148898	0.0884869	0.0955064
14	123 52 30.2	26 56.57	26.8	1 47 18.0	13.39	0.2156045	0.1024135	0.1092090
18	125 40 6.5	26 51.60	23.7	1 48 8.3	11.77	0.2162807	0.1158942	0.1224712
22	127 27 23.4	26 46.86	+20.6	+1 48 52.2	+10.17	0.2169182	0.1289420	0.1353077
26	129 14 21.8	26 42.45	17.6	1 49 29.7	8.56	0.2175165	0.1415698	0.1477291
30	131 1 3.5	26 38.35	14.3	1 50 0.7	6.94	0.2180752	0.1537865	0.1597426
Apr. 3	132 47 29.0	26 34.52	11.1	1 50 25.2	5.34	0.2185946	0.1655975	0.1713519
7	134 33 40.0	26 31.02	7.9	1 50 43.4	3.76	0.2190737	0.1770060	0.1825612
11	136 19 37.6	26 27.85	+ 4.6	+1 50 55.3	+ 2.18	0.2195125	0.1880186	0.1933798
15	138 5 23.2	26 24.94	+ 1.3	1 51 0.8	+ 0.60	0.2199110	0.1986464	0.2038209
19	139 50 57.7	26 22.34	- 2.1	1 51 0.1	- 0.96	0.2202686	0.2089044	0.2138994
23	141 36 22.3	26 20.03	5.3	1 50 53.1	2.54	0.2205856	0.2188074	0.2236294
27	143 21 38.3	26 18.02	8.6	1 50 39.8	4.09	0.2208616	0.2283662	0.2330186
May 1	145 6 46.9	26 16.30	-11.8	+1 50 20.4	- 5.63	0.2210965	0.2375872	0.2420724
5	146 51 49.1	26 14.85	15.0	1 49 54.8	7.16	0.2212901	0.2464750	0.2507953
9	148 36 46.1	26 13.74	18.1	1 49 23.1	8.68	0.2214425	0.2550351	0.2591948
13	150 21 39.4	26 12.94	21.2	1 48 45.4	10.21	0.2215536	0.2632768	0.2672818
17	152 6 30.0	26 12.40	24.2	1 48 1.4	11.74	0.2216232	0.2712121	0.2750692
21	153 51 19.0	26 12.19	-27.0	+1 47 11.5	-13.21	0.2216515	0.2788543	0.2825680
25	155 36 7.9	26 12.25	29.9	1 46 15.7	14.70	0.2216384	0.2862119	0.2897858
29	157 20 57.5	26 12.60	32.6	1 45 13.9	16.19	0.2215837	0.2932905	0.2967262
June 2	159 5 49.2	26 13.26	35.1	1 44 6.2	17.65	0.2214875	0.3000937	0.3033928
6	160 50 44.0	26 14.22	37.5	1 42 52.7	19.10	0.2213501	0.3066244	0.3097899
10	162 35 43.4	26 15.51	-39.8	+1 41 33.4	-20.55	0.2211715	0.3128900	0.3159261
14	164 20 48.5	26 17.07	42.0	1 40 8.3	21.99	0.2209516	0.3188994	0.3218112
18	166 6 0.4	26 18.94	44.0	1 38 37.5	23.40	0.2206906	0.3246627	0.3274546
22	167 51 20.4	26 21.11	45.9	1 37 1.1	24.81	0.2203886	0.3301878	0.3328623
26	169 36 49.7	26 23.55	47.5	1 35 19.0	26.21	0.2200456	0.3354786	0.3380366
30	171 22 29.2	26 26.29	-48.9	+1 33 31.4	-27.59	0.2196619	0.3405370	0.3429798
July 4	173 8 20.4	26 29.34	-50.2	+1 31 38.3	-28.96	0.2192378	0.3453653	0.3476944

MARS.

GREENWICH MEAN NOON.

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	°	'	"			°	'	"			At Date.	At Intermediate Date.
July	4	173	8 20.4	26 29.34	-50.2	+1	31	38.3	-28.96	0.2192378	0.3453653	0.3476944
	8	174	54 24.3	26 32.69	51.3	1	29	39.7	30.32	0.2187735	0.3499678	0.3521859
	12	176	40 42.3	26 36.35	52.3	1	27	35.7	31.67	0.2182689	0.3543505	0.3564623
	16	178	27 15.5	26 40.27	53.0	1	25	26.3	33.02	0.2177246	0.3585224	0.3605313
	20	180	14 4.9	26 44.51	53.5	1	23	11.7	34.32	0.2171406	0.3624897	0.3643982
Aug.	24	182	1 12.0	26 49.10	-53.8	+1	20	51.9	-35.60	0.2165175	0.3662564	0.3680645
	28	183	48 38.1	26 53.96	53.9	1	18	26.9	36.89	0.2158554	0.3698225	0.3715307
	1	185	36 24.1	26 59.12	53.8	1	15	56.8	38.14	0.2151548	0.3731891	0.3747982
	5	187	24 31.5	27 4.62	53.5	1	13	21.8	39.36	0.2144160	0.3763582	0.3778701
	9	189	13 1.5	27 10.37	53.0	1	10	41.9	40.60	0.2136393	0.3793350	0.3807538
	13	191	1 54.9	27 16.42	-52.2	+1	7	57.0	-41.80	0.2128253	0.3821268	0.3834551
	17	192	51 13.3	27 22.79	51.2	1	5	7.5	42.97	0.2119744	0.3847389	0.3859787
	21	194	40 57.6	27 29.46	50.0	1	2	13.2	44.11	0.2110871	0.3871745	0.3883261
	25	196	31 9.4	27 36.47	48.6	0	59	14.6	45.24	0.2101640	0.3894339	0.3904975
	29	198	21 49.8	27 43.73	47.1	0	56	11.3	46.35	0.2092058	0.3915167	0.3924923
Sept.	2	200	12 59.6	27 51.29	-45.3	+0	53	3.8	-47.39	0.2082126	0.3934241	0.3943134
	6	202	4 40.5	27 59.17	43.3	0	49	52.2	48.45	0.2071858	0.3951604	0.3959658
	10	203	56 53.4	28 7.31	41.1	0	46	36.2	49.47	0.2061255	0.3967306	0.3974556
	14	205	49 39.4	28 15.77	38.7	0	43	16.4	50.44	0.2050326	0.3981407	0.3987866
	18	207	43 0.0	28 24.52	36.2	0	39	52.7	51.37	0.2039081	0.3993936	0.3999615
	22	209	36 56.0	28 33.57	-33.4	+0	36	25.4	-52.27	0.2027528	0.4004900	0.4009791
	26	211	31 29.0	28 42.91	30.6	0	32	54.5	53.15	0.2015676	0.4014288	0.4018391
	30	213	26 39.7	28 52.53	27.5	0	29	20.2	53.97	0.2003531	0.4022105	0.4025432
Oct.	4	215	22 29.6	29 2.47	24.3	0	25	42.7	54.75	0.1991104	0.4028382	0.4030959
	8	217	18 59.9	29 12.65	21.0	0	22	2.2	55.49	0.1978408	0.4033171	0.4035026
	12	219	16 11.2	29 23.10	-17.5	+0	18	18.8	-56.16	0.1965451	0.4036529	0.4037685
	16	221	14 5.1	29 33.87	14.0	0	14	32.9	56.79	0.1952249	0.4038492	0.4038954
	20	223	12 42.6	29 44.86	10.4	0	10	44.5	57.39	0.1938811	0.4039069	0.4038836
	24	225	12 4.4	29 56.09	6.7	0	6	53.8	57.91	0.1925149	0.4038252	0.4037320
Nov.	28	227	12 11.7	30 7.61	-3.0	+0	3	1.2	58.36	0.1911278	0.4036044	0.4034427
	1	229	13 5.6	30 19.36	+0.9	-0	0	53.1	-58.76	0.1897210	0.4032475	0.4030194
	5	231	14 46.9	30 31.31	4.7	0	4	48.9	59.09	0.1882963	0.4027592	0.4024678
	9	233	17 16.4	30 43.50	8.5	0	8	45.8	59.35	0.1868552	0.4021460	0.4017940
	13	235	20 35.2	30 55.92	12.2	0	12	43.7	59.56	0.1853992	0.4014121	0.4010004
	17	237	24 44.1	31 8.55	16.0	0	16	42.3	59.66	0.1839300	0.4005594	0.4000884
	21	239	29 43.9	31 21.35	+19.7	-0	20	41.0	-59.69	0.1824492	0.3995878	0.3990575
	25	241	35 35.3	31 34.34	23.2	0	24	39.8	59.65	0.1809590	0.3984982	0.3979094
Dec.	29	243	42 18.8	31 47.45	26.8	0	28	38.2	59.52	0.1794610	0.3972926	0.3966480
	3	245	49 55.1	32 0.76	30.3	0	32	36.0	59.30	0.1779572	0.3959763	0.3952794
	7	247	58 25.1	32 14.20	33.5	0	36	32.6	58.97	0.1764499	0.3945569	0.3938104
	11	250	7 48.9	32 27.74	+36.6	-0	40	27.8	-58.56	0.1749410	0.3930394	0.3922446
	15	252	18 7.2	32 41.36	39.5	0	44	21.1	58.06	0.1734327	0.3914269	0.3905854
	19	254	29 20.0	32 55.04	42.2	0	48	12.5	57.46	0.1719274	0.3897201	0.3888317
	23	256	41 27.7	33 8.80	44.6	0	52	0.8	56.74	0.1704273	0.3879203	0.3869857
	27	258	54 30.5	33 22.61	46.8	0	55	46.2	55.91	0.1689347	0.3860293	0.3850513
	31	261	8 28.4	33 36.41	+48.7	-0	59	28.1	-54.97	0.1674521	0.3840531	0.3830351
	35	263	23 21.8	33 50.20	+50.4	-1	3	6.0	-53.92	0.1659817		

JUPITER.												
GREENWICH MEAN NOON.												
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	°	'	"			°	'	"			At Date.	At Intermediate Date.
Jan.	1	151	9 28.7	4 38.76	+26.4	+1	1	44.1	+3.93	0.7313678	0.6822350	0.6798040
	5	151	28 3.5	4 38.66	26.3	1	1	59.8	3.90	0.7314459	0.6774178	0.6750811
	9	151	46 38.0	4 38.56	26.2	1	2	15.3	3.88	0.7315236	0.6727984	0.6705743
	13	152	5 12.0	4 38.46	26.2	1	2	30.8	3.85	0.7316007	0.6684130	0.6663189
	17	152	23 45.6	4 38.36	26.1	1	2	46.1	3.82	0.7316774	0.6642961	0.6623485
	21	152	42 18.9	4 38.26	+26.0	+1	3	1.3	+3.79	0.7317535	0.6604805	0.6586964
	25	153	0 51.8	4 38.17	25.9	1	3	16.4	3.76	0.7318292	0.6570004	0.6553965
	29	153	19 24.3	4 38.08	25.8	1	3	31.4	3.73	0.7319043	0.6538888	0.6524814
	Feb. 2	153	37 56.4	4 37.99	25.7	1	3	46.3	3.70	0.7319789	0.6511780	0.6499819
Feb.	6	153	56 28.2	4 37.89	25.6	1	4	1.0	3.67	0.7320530	0.6488964	0.6479244
	10	154	14 59.6	4 37.80	+25.5	+1	4	15.7	+3.64	0.7321266	0.6470677	0.6463286
	14	154	33 30.6	4 37.71	25.4	1	4	30.2	3.62	0.7321997	0.6457084	0.6452090
	18	154	52 1.2	4 37.62	25.3	1	4	44.6	3.59	0.7322723	0.6448310	0.6445757
	22	155	10 31.5	4 37.53	25.2	1	4	58.9	3.56	0.7323444	0.6444434	0.6444352
	26	155	29 1.4	4 37.44	25.1	1	5	13.1	3.53	0.7324161	0.6445507	0.6447904
	Mar. 2	155	47 31.0	4 37.35	+25.0	+1	5	27.1	+3.50	0.7324872	0.6451530	0.6456380
	6	156	6 0.2	4 37.25	24.9	1	5	41.1	3.47	0.7325578	0.6462434	0.6469680
	10	156	24 29.0	4 37.16	24.8	1	5	54.9	3.44	0.7326279	0.6478089	0.6487636
Mar.	14	156	42 57.4	4 37.07	24.6	1	6	8.6	3.41	0.7326974	0.6498291	0.6510030
	18	157	1 25.5	4 36.99	24.5	1	6	22.2	3.38	0.7327665	0.6522816	0.6536615
	22	157	19 53.3	4 36.90	+24.4	+1	6	35.6	+3.35	0.7328350	0.6551395	0.6567122
	26	157	38 20.8	4 36.82	24.3	1	6	49.0	3.32	0.7329031	0.6583760	0.6601277
	30	157	56 47.9	4 36.73	24.1	1	7	2.2	3.29	0.7329706	0.6619628	0.6638773
	Apr. 3	158	15 14.6	4 36.65	24.0	1	7	15.3	3.26	0.7330375	0.6658669	0.6679272
	7	158	33 41.0	4 36.56	23.9	1	7	28.3	3.23	0.7331040	0.6700537	0.6722419
	11	158	52 7.1	4 36.48	+23.7	+1	7	41.1	+3.20	0.7331700	0.6744871	0.6767845
	15	159	10 32.9	4 36.39	23.6	1	7	53.9	3.17	0.7332354	0.6791303	0.6815203
Apr.	19	159	28 58.3	4 36.31	23.4	1	8	6.5	3.14	0.7333002	0.6839506	0.6864170
	23	159	47 23.4	4 36.24	23.3	1	8	19.0	3.11	0.7333645	0.6889162	0.6914449
	27	160	5 48.2	4 36.16	23.1	1	8	31.4	3.08	0.7334282	0.6939990	0.6965744
	May 1	160	24 12.6	4 36.08	+23.0	+1	8	43.7	+3.05	0.7334914	0.6991674	0.7017744
	5	160	42 36.8	4 36.00	22.8	1	8	55.8	3.02	0.7335540	0.7043920	0.7070166
	9	161	1 0.7	4 35.92	22.7	1	9	7.8	3.00	0.7336161	0.7096449	0.7122733
	13	161	19 24.2	4 35.85	22.5	1	9	19.7	2.96	0.7336776	0.7148995	0.7175305
	17	161	37 47.4	4 35.77	22.3	1	9	31.5	2.93	0.7337385	0.7201340	0.7227374
	21	161	56 10.3	4 35.69	+22.2	+1	9	43.2	+2.90	0.7337990	0.7253285	0.7279052
May	25	162	14 32.9	4 35.61	22.0	1	9	54.7	2.87	0.7338588	0.7304652	0.7330063
	29	162	32 55.2	4 35.54	21.9	1	10	6.1	2.84	0.7339180	0.7355263	0.7380232
	June 2	162	51 17.3	4 35.47	21.7	1	10	17.4	2.80	0.7339767	0.7404949	0.7429391
	6	163	9 39.0	4 35.40	21.5	1	10	28.5	2.77	0.7340348	0.7455342	0.7477383
	10	163	28 0.4	4 35.33	+21.3	+1	10	39.5	+2.74	0.7340923	0.7500903	0.7524087
	14	163	46 21.6	4 35.25	21.1	1	10	50.5	2.71	0.7341493	0.7546925	0.7569404
	18	164	4 42.5	4 35.18	21.0	1	11	1.2	2.68	0.7342057	0.7591514	0.7613246
	22	164	23 3.1	4 35.11	20.8	1	11	11.9	2.65	0.7342616	0.7634588	0.7655530
	26	164	41 23.4	4 35.04	20.6	1	11	22.4	2.62	0.7343168	0.7676060	0.7696165
June	30	164	59 43.4	4 34.97	+20.4	+1	11	32.8	+2.59	0.7343715	0.7715838	0.7735069
	July 4	165	18 3.1	4 34.91	+20.2	+1	11	43.1	+2.56	0.7344257	0.7753848	0.7772163

JUPITER.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							Date.	At Interme- diate Date.
July	4 165 18 3.1	4 34.91	+20.2	+1 11 43.1	+2.56	0.7344257	0.7753848	0.7772163
	8 165 36 22.6	4 34.84	20.0	1 11 53.3	2.53	0.7344793	0.7790012	0.7807389
	12 165 54 41.8	4 34.77	19.8	1 12 3.3	2.50	0.7345323	0.7824291	0.7840712
	16 166 13 0.8	4 34.71	19.6	1 12 13.2	2.47	0.7345848	0.7856648	0.7872095
	20 166 31 19.5	4 34.64	19.4	1 12 23.0	2.44	0.7346367	0.7887049	0.7901505
	24 166 49 37.9	4 34.58	+19.2	+1 12 32.7	+2.40	0.7346880	0.7915457	0.7928897
	28 167 7 56.1	4 34.51	19.0	1 12 42.2	2.37	0.7347388	0.7941821	0.7954223
	Aug. 1 167 26 14.1	4 34.45	18.8	1 12 51.6	2.34	0.7347890	0.7966099	0.7977442
	5 167 44 31.8	4 34.38	18.6	1 13 0.9	2.31	0.7348386	0.7988253	0.7998530
	9 168 2 49.2	4 34.32	18.4	1 13 10.1	2.28	0.7348876	0.8008271	0.8017476
	13 168 21 6.4	4 34.26	+18.2	+1 13 19.1	+2.24	0.7349361	0.8026144	0.8034272
	17 168 39 23.3	4 34.20	18.0	1 13 28.0	2.21	0.7349840	0.8041858	0.8048899
	21 168 57 40.0	4 34.14	17.7	1 13 36.8	2.18	0.7350314	0.8055393	0.8061335
	25 169 15 56.5	4 34.09	17.5	1 13 45.5	2.15	0.7350782	0.8066721	0.8071547
	29 169 34 12.8	4 34.03	17.3	1 13 54.0	2.12	0.7351244	0.8075811	0.8079511
	Sept. 2 169 52 28.8	4 33.98	+17.1	+1 14 2.4	+2.08	0.7351700	0.8082648	0.8085222
	6 170 10 44.6	4 33.92	16.9	1 14 10.7	2.05	0.7352151	0.8087232	0.8088677
	10 170 29 0.2	4 33.86	16.6	1 14 18.8	2.03	0.7352595	0.8089558	0.8089879
	14 170 47 15.6	4 33.81	16.4	1 14 26.8	2.00	0.7353034	0.8089635	0.8088824
	18 171 5 30.7	4 33.75	16.2	1 14 34.7	1.96	0.7353467	0.8087445	0.8085495
	22 171 23 45.6	4 33.70	+15.9	+1 14 42.5	+1.92	0.7353894	0.8082973	0.8079873
	26 171 42 0.3	4 33.65	15.7	1 14 50.1	1.89	0.7354315	0.8076199	0.8071953
	30 172 0 14.9	4 33.60	15.5	1 14 57.6	1.86	0.7354729	0.8067132	0.8061735
	Oct. 4 172 18 29.2	4 33.55	15.2	1 15 5.0	1.83	0.7355138	0.8055765	0.8049226
	8 172 36 43.3	4 33.50	15.0	1 15 12.3	1.80	0.7355541	0.8042120	0.8034449
	12 172 54 57.2	4 33.46	+14.7	+1 15 19.4	+1.76	0.7355938	0.8026212	0.8017410
	16 173 13 11.0	4 33.41	14.5	1 15 26.4	1.73	0.7356329	0.8008042	0.7998109
	20 173 31 24.5	4 33.36	14.3	1 15 33.3	1.70	0.7356714	0.7987612	0.7976550
	24 173 49 37.8	4 33.31	14.0	1 15 40.0	1.67	0.7357093	0.7964925	0.7952739
	28 174 7 51.0	4 33.26	13.8	1 15 46.6	1.64	0.7357467	0.7939997	0.7926701
	Nov. 1 174 26 4.0	4 33.22	+13.5	+1 15 53.1	+1.60	0.7357834	0.7912858	0.7898475
	5 174 44 16.8	4 33.17	13.3	1 15 59.4	1.57	0.7358197	0.7883557	0.7868111
	9 175 2 29.4	4 33.13	13.0	1 16 5.7	1.54	0.7358553	0.7852138	0.7835642
	13 175 20 41.8	4 33.09	12.8	1 16 11.8	1.51	0.7358904	0.7818629	0.7801105
	17 175 38 54.1	4 33.05	12.5	1 16 17.7	1.48	0.7359248	0.7783074	0.7764540
	21 175 57 6.2	4 33.01	+12.3	+1 16 23.6	+1.44	0.7359586	0.7745512	0.7725998
	25 176 15 18.2	4 32.96	12.0	1 16 29.3	1.41	0.7359919	0.7706008	0.7685552
	29 176 33 30.0	4 32.92	11.7	1 16 34.8	1.38	0.7360245	0.7664645	0.7643299
	Dec. 3 176 51 41.6	4 32.88	11.5	1 16 40.3	1.35	0.7360565	0.7621528	0.7599343
	7 177 9 53.1	4 32.84	11.2	1 16 45.6	1.32	0.7360879	0.7576758	0.7553787
	11 177 28 4.3	4 32.80	+11.0	+1 16 50.8	+1.28	0.7361187	0.7530442	0.7506735
	15 177 46 15.5	4 32.77	10.7	1 16 55.8	1.25	0.7361487	0.7482683	0.7458300
	19 178 4 26.5	4 32.73	10.4	1 17 0.8	1.22	0.7361781	0.7433607	0.7408620
	23 178 22 37.3	4 32.70	10.2	1 17 5.6	1.19	0.7362069	0.7383365	0.7357862
	27 178 40 48.1	4 32.66	9.9	1 17 10.2	1.15	0.7362351	0.7332140	0.7306221
	31 178 58 58.6	4 32.63	+ 9.7	+1 17 14.8	+1.12	0.7362627	0.7280132	0.7253901
	35 179 17 9.1	4 32.59	+ 9.4	+1 17 19.2	+1.09	0.7362896	0.7227554	

SATURN.								
GREENWICH MEAN NOON.								
Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
Jan. 1	233 15 40.9	1 51.07	-1 25.1	+2 8 48.4	-2.45	0.9974067	1.0261827	1.0252153
5	233 23 5.2	1 51.06	1 25.3	2 8 38.6	2.46	0.9974402	1.0242148	1.0231823
9	233 30 29.4	1 51.04	1 25.5	2 8 28.7	2.47	0.9974737	1.0221184	1.0210242
13	233 37 53.5	1 51.03	1 25.7	2 8 18.8	2.48	0.9975071	1.0199006	1.0187490
17	233 45 17.5	1 51.01	1 25.9	2 8 8.9	2.49	0.9975405	1.0175700	1.0163645
21	233 52 41.5	1 50.99	-1 26.1	+2 7 59.0	-2.50	0.9975738	1.0151334	1.0138776
25	234 0 5.4	1 50.98	1 26.3	2 7 49.0	2.51	0.9976071	1.0125983	1.0112966
29	234 7 29.3	1 50.96	1 26.5	2 7 39.0	2.51	0.9976402	1.0099737	1.0086305
Feb. 2	234 14 53.1	1 50.94	1 26.7	2 7 29.0	2.52	0.9976733	1.0072686	1.0058895
6	234 22 16.8	1 50.93	1 26.9	2 7 18.9	2.53	0.9977063	1.0044946	1.0030855
10	234 29 40.5	1 50.91	-1 27.1	+2 7 8.8	-2.54	0.9977392	1.0016638	1.0002309
14	234 37 4.1	1 50.90	1 27.3	2 6 58.6	2.55	0.9977720	0.9987881	0.9973371
18	234 44 27.6	1 50.88	1 27.5	2 6 48.4	2.56	0.9978047	0.9958794	0.9944163
22	234 51 51.1	1 50.86	1 27.7	2 6 38.2	2.57	0.9978372	0.9929495	0.9914807
26	234 59 14.5	1 50.85	1 27.9	2 6 28.0	2.58	0.9978696	0.9900117	0.9885441
Mar. 2	235 6 37.8	1 50.83	-1 28.1	+2 6 17.7	-2.58	0.9979020	0.9870799	0.9856212
6	235 14 1.1	1 50.82	1 28.3	2 6 7.4	2.59	0.9979343	0.9841697	0.9827274
10	235 21 24.3	1 50.80	1 28.5	2 5 57.0	2.60	0.9979665	0.9812963	0.9798785
14	235 28 47.4	1 50.78	1 28.6	2 5 46.6	2.60	0.9979986	0.9784757	0.9770898
18	235 36 10.5	1 50.77	1 28.8	2 5 36.2	2.61	0.9980306	0.9757226	0.9743757
22	235 43 33.5	1 50.75	-1 29.0	+2 5 25.8	-2.62	0.9980624	0.9730510	0.9717506
26	235 50 56.5	1 50.73	1 29.2	2 5 15.3	2.63	0.9980943	0.9704762	0.9692300
30	235 58 19.4	1 50.72	1 29.4	2 5 4.8	2.64	0.9981261	0.9680139	0.9668300
Apr. 3	236 5 42.2	1 50.70	1 29.5	2 4 54.2	2.64	0.9981578	0.9656799	0.9645658
7	236 13 5.0	1 50.69	1 29.7	2 4 43.6	2.65	0.9981894	0.9634893	0.9624526
11	236 20 27.7	1 50.67	-1 29.9	+2 4 33.0	-2.66	0.9982209	0.9614569	0.9605037
15	236 27 50.3	1 50.66	1 30.0	2 4 22.4	2.67	0.9982522	0.9595944	0.9587309
19	236 35 12.9	1 50.64	1 30.2	2 4 11.7	2.68	0.9982834	0.9579140	0.9571452
23	236 42 35.4	1 50.63	1 30.3	2 4 1.0	2.69	0.9983145	0.9564258	0.9557575
27	236 49 57.9	1 50.61	1 30.5	2 3 50.3	2.70	0.9983456	0.9551412	0.9545782
May 1	236 57 20.3	1 50.59	-1 30.7	+2 3 39.5	-2.71	0.9983766	0.9540695	0.9536162
5	237 4 42.6	1 50.58	1 30.8	2 3 28.7	2.72	0.9984075	0.9532189	0.9528786
9	237 12 4.9	1 50.56	1 31.0	2 3 17.8	2.72	0.9984383	0.9525955	0.9523698
13	237 19 27.1	1 50.55	1 31.1	2 3 6.9	2.73	0.9984690	0.952019	0.9520920
17	237 26 49.2	1 50.53	1 31.3	2 2 56.0	2.74	0.9984996	0.9520402	0.9520465
21	237 34 11.3	1 50.51	-1 31.4	+2 2 45.1	-2.75	0.9985301	0.9521108	0.9522332
25	237 41 33.3	1 50.50	1 31.6	2 2 34.1	2.76	0.9985605	0.9524134	0.9526512
29	237 48 55.3	1 50.48	1 31.7	2 2 23.1	2.76	0.9985908	0.9529462	0.9532982
June 2	237 56 17.2	1 50.47	1 31.8	2 2 12.1	2.77	0.9986210	0.9537062	0.9541694
6	238 3 39.0	1 50.45	1 32.0	2 2 1.0	2.78	0.9986510	0.9546868	0.9552575
10	238 11 0.8	1 50.44	-1 32.1	+2 1 49.9	-2.79	0.9986811	0.9558800	0.9565534
14	238 18 22.5	1 50.42	1 32.3	2 1 38.8	2.80	0.9987111	0.9572764	0.9580476
18	238 25 44.1	1 50.40	1 32.4	2 1 27.6	2.80	0.9987410	0.9588658	0.9597299
22	238 33 5.7	1 50.39	1 32.5	2 1 16.4	2.81	0.9987708	0.9606383	0.9615897
26	238 40 27.2	1 50.38	1 32.7	2 1 5.2	2.82	0.9988005	0.9625825	0.9636154
30	238 47 48.7	1 50.36	-1 32.8	+2 0 53.9	-2.83	0.9988301	0.9646866	0.9657944
July 4	238 55 10.1	1 50.35	-1 32.9	+2 0 42.6	-2.83	0.9988596	0.9669369	0.9681120

SATURN.

GREENWICH MEAN NOON.

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											At Date.	At Intermediate Date.		
July	4	238	55	10.1	1 50.35	-1 32.9	+2	0	42.6	-2.83	0.9988596	0.9669369	0.9681120	
	8	239	2	31.5	1 50.33	1 33.0	2	0	31.3	-2.84	0.9988889	0.9693180	0.9705530	
	12	239	9	52.8	1 50.32	1 33.1	2	0	20.0	-2.85	0.9989181	0.9718152	0.9731029	
	16	239	17	14.0	1 50.30	1 33.3	2	0	8.6	-2.85	0.9989473	0.9744144	0.9757479	
	20	239	24	35.2	1 50.28	1 33.4	1	59	57.2	-2.86	0.9989764	0.9771017	0.9784742	
Aug.	24	239	31	56.3	1 50.27	-1 33.5	+1	59	45.7	-2.87	0.9990054	0.9798635	0.9812681	
	28	239	39	17.3	1 50.25	1 33.6	1	59	34.2	-2.88	0.9990343	0.9826859	0.9841150	
	1	239	46	38.3	1 50.24	1 33.7	1	59	22.7	-2.88	0.9990631	0.9855537	0.9870001	
	5	239	53	59.2	1 50.22	1 33.9	1	59	11.2	-2.89	0.9990918	0.9884524	0.9899088	
	9	240	1	20.1	1 50.21	1 34.0	1	58	59.6	-2.90	0.9991204	0.9913677	0.9928274	
	13	240	8	40.9	1 50.20	-1 34.1	+1	58	48.0	-2.91	0.9991489	0.9942866	0.9957437	
	17	240	16	1.7	1 50.19	1 34.2	1	58	36.4	-2.92	0.9991773	0.9971974	0.9986462	
	21	240	23	22.4	1 50.17	1 34.3	1	58	24.7	-2.92	0.9992055	1.0000887	1.0015234	
	25	240	30	43.1	1 50.16	1 34.4	1	58	13.0	-2.93	0.9992335	1.0029488	1.0043634	
	29	240	38	3.7	1 50.14	1 34.5	1	58	1.3	-2.94	0.9992616	1.0057658	1.0071547	
Sept.	2	240	45	24.2	1 50.13	-1 34.6	+1	57	49.5	-2.95	0.9992896	1.0085286	1.0098862	
	6	240	52	44.7	1 50.11	1 34.7	1	57	37.7	-2.96	0.9993175	1.0112263	1.0125478	
	10	241	0	5.1	1 50.10	1 34.8	1	57	25.9	-2.96	0.9993453	1.0138498	1.0151311	
	14	241	7	25.5	1 50.09	1 34.9	1	57	14.0	-2.97	0.9993730	1.0163909	1.0176280	
	18	241	14	45.8	1 50.07	1 35.0	1	57	2.2	-2.97	0.9994006	1.0188416	1.0200307	
	22	241	22	6.1	1 50.06	-1 35.1	+1	56	50.2	-2.98	0.9994281	1.0211943	1.0223312	
	26	241	29	26.3	1 50.04	1 35.2	1	56	38.3	-2.99	0.9994555	1.0234405	1.0245214	
	30	241	36	46.4	1 50.03	1 35.3	1	56	26.4	-2.99	0.9994829	1.0255729	1.0265942	
	Oct.	4	241	44	6.5	1 50.02	1 35.4	1	56	14.4	-3.00	0.9995102	1.0275846	1.0285432
		8	241	51	26.6	1 50.01	1 35.5	1	56	2.3	-3.01	0.9995374	1.0294696	1.0303634
	12	241	58	46.6	1 49.99	-1 35.6	+1	55	50.3	-3.02	0.9995644	1.0312238	1.0320501	
	16	242	6	6.5	1 49.98	1 35.7	1	55	38.2	-3.03	0.9995913	1.0328418	1.0335986	
	20	242	13	26.4	1 49.96	1 35.8	1	55	26.1	-3.03	0.9996181	1.0343198	1.0350047	
	24	242	20	46.2	1 49.95	1 35.9	1	55	13.9	-3.04	0.9996447	1.0356528	1.0362632	
	28	242	28	6.1	1 49.94	1 36.0	1	55	1.7	-3.05	0.9996713	1.0368358	1.0373701	
Nov.	1	242	35	25.7	1 49.92	-1 36.1	+1	54	49.5	-3.06	0.9996978	1.0378658	1.0383224	
	5	242	42	45.4	1 49.91	1 36.2	1	54	37.3	-3.06	0.9997242	1.0387398	1.0391180	
	9	242	50	5.0	1 49.90	1 36.2	1	54	25.0	-3.07	0.9997506	1.0394566	1.0397554	
	13	242	57	24.6	1 49.89	1 36.3	1	54	12.7	-3.08	0.9997768	1.0400142	1.0402329	
	17	243	4	44.1	1 49.87	1 36.4	1	54	0.4	-3.09	0.9998029	1.0404111	1.0405484	
	21	243	12	3.6	1 49.86	-1 36.4	+1	53	48.0	-3.09	0.9998289	1.0406448	1.0407000	
	25	243	19	23.0	1 49.85	1 36.5	1	53	35.6	-3.10	0.9998549	1.0407141	1.0406869	
	29	243	26	42.4	1 49.83	1 36.5	1	53	23.2	-3.11	0.9998808	1.0406184	1.0405086	
	Dec.	3	243	34	1.7	1 49.82	1 36.6	1	53	10.8	-3.11	0.9999065	1.0403578	1.0401661
		7	243	41	20.9	1 49.81	1 36.6	1	52	58.3	-3.12	0.9999322	1.0399338	1.0396610
	11	243	48	40.1	1 49.80	-1 36.7	+1	52	45.8	-3.13	0.9999578	1.0393477	1.0389941	
	15	243	55	59.3	1 49.79	1 36.7	1	52	33.2	-3.14	0.9999832	1.0386003	1.0381664	
	19	244	3	18.4	1 49.77	1 36.8	1	52	20.7	-3.15	1.0000085	1.0376926	1.0371792	
	23	244	10	37.5	1 49.76	1 36.9	1	52	8.1	-3.15	1.0000338	1.0366264	1.0360345	
	27	244	17	56.5	1 49.74	1 36.9	1	51	55.5	-3.16	1.0000590	1.0354041	1.0347354	
Dec.	31	244	25	15.5	1 49.73	-1 37.0	+1	51	42.8	-3.17	1.0000841	1.0340292	1.0332861	
	35	244	32	34.4	1 49.72	-1 37.0	+1	51	30.1	-3.17	1.0001090	1.0325067		

URANUS.								
GREENWICH MEAN NOON.								
Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
Jan. 1	235 21 31.7	44.15	-5.5	+0 14 28.4	-0.56	1.2740325	1.2898097	1.2887183
9	235 27 24.9	44.14	5.5	0 14 23.9	0.56	1.2740651	1.2875544	1.2863238
17	235 33 18.0	44.13	5.5	0 14 19.4	0.56	1.2740977	1.2850308	1.2836814
25	235 39 11.1	44.13	5.5	0 14 14.9	0.56	1.2741303	1.2822807	1.2808342
Feb. 2	235 45 4.1	44.12	5.4	0 14 10.4	0.57	1.2741629	1.2793484	1.2778302
10	235 50 57.1	44.12	-5.4	+0 14 5.9	-0.57	1.2741956	1.2762871	1.2747261
18	235 56 50.0	44.11	5.4	0 14 1.3	0.57	1.2742283	1.2731544	1.2715794
26	236 2 42.9	44.10	5.3	0 13 56.8	0.57	1.2742609	1.2700078	1.2684480
Mar. 6	236 8 35.7	44.10	5.3	0 13 52.3	0.57	1.2742936	1.2669080	1.2653961
14	236 14 28.5	44.09	5.3	0 13 47.7	0.57	1.2743264	1.2639201	1.2624874
22	236 20 21.2	44.09	-5.3	+0 13 43.2	-0.57	1.2743591	1.2611056	1.2597811
30	236 26 13.9	44.08	5.2	0 13 38.7	0.57	1.2743919	1.2585215	1.2573345
Apr. 7	236 32 6.5	44.07	5.2	0 13 34.1	0.57	1.2744247	1.2562265	1.2552042
15	236 37 59.1	44.07	5.2	0 13 29.6	0.57	1.2744575	1.2542726	1.2534365
23	236 43 51.7	44.06	5.2	0 13 25.1	0.57	1.2744903	1.2527004	1.2520688
May 1	236 49 44.2	44.06	-5.1	+0 13 20.5	-0.57	1.2745231	1.2515456	1.2511342
9	236 55 36.6	44.05	5.1	0 13 16.0	0.57	1.2745560	1.2508367	1.2506543
17	237 1 29.1	44.05	5.1	0 13 11.4	0.57	1.2745889	1.2505873	1.2506358
25	237 7 21.4	44.04	5.0	0 13 6.9	0.57	1.2746218	1.2507996	1.2510782
June 2	237 13 13.7	44.03	5.0	0 13 2.3	0.57	1.2746547	1.2514699	1.2519726
10	237 19 6.0	44.03	-5.0	+0 12 57.8	-0.57	1.2746877	1.2525823	1.2532950
18	237 24 58.2	44.02	5.0	0 12 53.2	0.57	1.2747206	1.2541064	1.2550125
26	237 30 50.4	44.02	4.9	0 12 48.7	0.57	1.2747536	1.2560083	1.2570892
July 4	237 36 42.5	44.01	4.9	0 12 44.1	0.57	1.2747866	1.2582479	1.2594785
12	237 42 34.6	44.00	4.9	0 12 39.5	0.57	1.2748196	1.2607740	1.2621278
20	237 48 26.7	44.00	-4.9	+0 12 35.0	-0.57	1.2748526	1.2635331	1.2649837
28	237 54 18.7	43.99	4.8	0 12 30.4	0.57	1.2748856	1.2664722	1.2679914
Aug. 5	238 0 10.6	43.99	4.8	0 12 25.9	0.57	1.2749187	1.2695336	1.2710912
13	238 6 2.5	43.98	4.8	0 12 21.3	0.57	1.2749518	1.2726572	1.2742249
21	238 11 54.3	43.98	4.8	0 12 16.7	0.57	1.2749848	1.2757882	1.2773401
29	238 17 46.1	43.97	-4.7	+0 12 12.2	-0.57	1.2750179	1.2788737	1.2803820
Sept. 6	238 23 37.9	43.96	4.7	0 12 7.6	0.57	1.2750510	1.2818586	1.2832976
14	238 29 29.6	43.96	4.7	0 12 3.0	0.57	1.2750842	1.2846938	1.2860416
22	238 35 21.3	43.95	4.7	0 11 58.5	0.57	1.2751173	1.2873363	1.2885719
30	238 41 12.9	43.95	4.6	0 11 53.9	0.57	1.2751505	1.2897436	1.2908464
Oct. 8	238 47 4.5	43.94	-4.6	+0 11 49.3	-0.57	1.2751836	1.2918765	1.2928305
16	238 52 56.0	43.93	4.6	0 11 44.7	0.57	1.2752168	1.2937053	1.2944969
24	238 58 47.4	43.93	4.6	0 11 40.1	0.57	1.2752500	1.2952023	1.2958183
Nov. 1	239 4 38.9	43.92	4.5	0 11 35.6	0.57	1.2752832	1.2963426	1.2967732
9	239 10 30.2	43.92	4.5	0 11 31.0	0.57	1.2753164	1.2971091	1.2973490
17	239 16 21.6	43.91	-4.5	+0 11 26.4	-0.57	1.2753496	1.2974919	1.2975365
25	239 22 12.9	43.90	4.4	0 11 21.8	0.57	1.2753829	1.2974824	1.2973291
Dec. 3	239 28 4.1	43.90	4.4	0 11 17.3	0.57	1.2754161	1.2970777	1.2967294
11	239 33 55.3	43.89	4.4	0 11 12.7	0.57	1.2754494	1.2962853	1.2957468
19	239 39 46.4	43.89	4.3	0 11 8.1	0.57	1.2754826	1.2951156	1.2943932
27	239 45 37.5	43.88	-4.3	+0 11 3.5	-0.57	1.2755158	1.2935825	1.2926867
35	239 51 28.5	43.88	-4.3	+0 10 58.9	-0.57	1.2755491	1.2917098	

NEPTUNE.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.			Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.			Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
	°	'	"			°	'	"			At Date.	At Intermediate Date.
Jan. 1	79	1	27.3	21.98	-48.4	-1	23	42.5	+0.42	1.4750828	1.4616941	1.4621383
9	79	4	23.2	21.98	48.4	1	23	39.1	0.42	1.4750839	1.4626477	1.4632204
17	79	7	19.0	21.98	48.5	1	23	35.7	0.42	1.4750849	1.4638523	1.4645400
25	79	10	14.9	21.98	48.5	1	23	32.3	0.42	1.4750859	1.4652794	1.4660668
Feb. 2	79	13	10.7	21.98	48.5	1	23	28.9	0.42	1.4750869	1.4668975	1.4677672
10	79	16	6.5	21.98	-48.5	-1	23	25.6	+0.42	1.4750879	1.4686705	1.4696024
18	79	19	2.3	21.98	48.5	1	23	22.2	0.42	1.4750889	1.4705582	1.4715330
26	79	21	58.2	21.98	48.5	1	23	18.8	0.42	1.4750900	1.4725220	1.4735204
Mar. 6	79	24	54.0	21.98	48.6	1	23	15.4	0.42	1.4750910	1.4745231	1.4755249
14	79	27	49.8	21.98	48.6	1	23	12.0	0.42	1.4750920	1.4765211	1.4775065
22	79	30	45.6	21.97	-48.6	-1	23	8.6	+0.42	1.4750931	1.4784774	1.4794301
30	79	33	41.4	21.97	48.6	1	23	5.1	0.42	1.4750941	1.4803599	1.4812622
Apr. 7	79	36	37.2	21.97	48.6	1	23	1.7	0.42	1.4750951	1.4821336	1.4829700
15	79	39	33.0	21.97	48.6	1	22	58.3	0.42	1.4750962	1.4837686	1.4845261
23	79	42	28.8	21.97	48.7	1	22	54.9	0.42	1.4750972	1.4852401	1.4859078
May 1	79	45	24.5	21.97	-48.7	-1	22	51.5	+0.42	1.4750982	1.4865266	1.4870936
9	79	48	20.3	21.97	48.7	1	22	48.1	0.42	1.4750993	1.4876067	1.4880646
17	79	51	16.1	21.97	48.7	1	22	44.6	0.42	1.4751003	1.4884661	1.4888097
25	79	54	11.8	21.97	48.7	1	22	41.2	0.42	1.4751013	1.4890943	1.4893187
June 2	79	57	7.6	21.97	48.7	1	22	37.8	0.42	1.4751024	1.4894822	1.4895837
10	80	0	3.3	21.97	-48.8	-1	22	34.3	+0.42	1.4751034	1.4896237	1.4896022
18	80	2	59.1	21.97	48.8	1	22	30.9	0.42	1.4751044	1.4895195	1.4893759
26	80	5	54.8	21.97	48.8	1	22	27.4	0.42	1.4751055	1.4891717	1.4889070
July 4	80	8	50.6	21.97	48.8	1	22	24.0	0.42	1.4751065	1.4885834	1.4882021
12	80	11	46.3	21.97	48.8	1	22	20.5	0.42	1.4751075	1.4877648	1.4872731
20	80	14	42.0	21.97	-48.8	-1	22	17.1	+0.42	1.4751086	1.4867287	1.4861331
28	80	17	37.8	21.96	48.8	1	22	13.6	0.42	1.4751096	1.4854888	1.4847976
Aug. 5	80	20	33.5	21.96	48.9	1	22	10.1	0.42	1.4751107	1.4840628	1.4832874
13	80	23	29.2	21.96	48.9	1	22	6.7	0.42	1.4751117	1.4824744	1.4816268
21	80	26	24.9	21.96	48.9	1	22	3.2	0.42	1.4751128	1.4807479	1.4798406
29	80	29	20.6	21.96	-48.9	-1	21	59.7	+0.42	1.4751138	1.4789093	1.4779579
Sept. 6	80	32	16.3	21.96	48.9	1	21	56.3	0.44	1.4751149	1.4769907	1.4760116
14	80	35	12.0	21.96	48.9	1	21	52.8	0.44	1.4751160	1.4750253	1.4740363
22	80	38	7.7	21.96	48.9	1	21	49.3	0.44	1.4751170	1.4730489	1.4720670
30	80	41	3.3	21.96	49.0	1	21	45.8	0.44	1.4751181	1.4710961	1.4701416
Oct. 8	80	43	59.0	21.96	-49.0	-1	21	42.3	+0.44	1.4751192	1.4692078	1.4682990
16	80	46	54.7	21.96	49.0	1	21	38.8	0.44	1.4751203	1.4674211	1.4665771
24	80	49	50.4	21.96	49.0	1	21	35.3	0.44	1.4751213	1.4657723	1.4650119
Nov. 1	80	52	46.0	21.96	49.0	1	21	31.8	0.44	1.4751224	1.4642996	1.4636398
9	80	55	41.7	21.96	49.0	1	21	28.3	0.44	1.4751235	1.4630358	1.4624917
17	80	58	37.3	21.96	-49.0	-1	21	24.8	+0.44	1.4751246	1.4620102	1.4615943
25	81	1	33.0	21.95	49.1	1	21	21.3	0.44	1.4751257	1.4612465	1.4609702
Dec. 3	81	4	28.6	21.95	49.1	1	21	17.8	0.44	1.4751268	1.4607661	1.4606358
11	81	7	24.2	21.95	49.1	1	21	14.3	0.44	1.4751279	1.4605796	1.4605984
19	81	10	19.9	21.95	49.1	1	21	10.7	0.44	1.4751290	1.4606918	1.4608603
27	81	13	15.5	21.95	-49.1	-1	21	7.2	+0.44	1.4751301	1.4611022	1.4614168
35	81	16	11.1	21.95	-49.1	-1	21	3.7	+0.44	1.4751312	1.4618016	

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.	
Jan. 1	+0.1944887	+0.2030586	-571	-0.8842151	-0.8825947	-223	-0.3836339	-0.3829307	+224
2	0.2116127	0.2201507	578	0.8809052	0.8791468	234	0.3821975	0.3814343	218
3	0.2286715	0.2371743	584	0.8773197	0.8754240	245	0.3806413	0.3798185	212
4	0.2456584	0.2541232	590	0.8734597	0.8714270	256	0.3789660	0.3780838	206
5	0.2625680	0.2709921	596	0.8693262	0.8671576	267	0.3771720	0.3762307	200
6	+0.2793948	+0.2877757	-601	-0.8649214	-0.8626176	-278	-0.3752601	-0.3742603	+194
7	0.2961339	0.3044684	606	0.8602464	0.8578081	290	0.3732313	0.3721731	187
8	0.3127788	0.3210645	611	0.8553029	0.8527311	302	0.3710858	0.3699697	180
9	0.3293248	0.3375590	616	0.8500929	0.8473884	314	0.3688249	0.3676513	173
10	0.3457666	0.3539471	620	0.8446181	0.8417824	326	0.3664492	0.3652186	166
11	+0.3620996	+0.3702234	-623	-0.8388813	-0.8359150	-338	-0.3639598	-0.3626728	+159
12	0.3783181	0.3863833	626	0.8328839	0.8297883	351	0.3613577	0.3600147	152
13	0.3944182	0.4024219	629	0.8266285	0.8234049	363	0.3586438	0.3572452	145
14	0.4103940	0.4183343	632	0.8201175	0.8167665	376	0.3558190	0.3543653	138
15	0.4262420	0.4341163	634	0.8133523	0.8099753	389	0.3528842	0.3513759	130
16	+0.4419569	+0.4497633	-636	-0.8063358	-0.8027342	-402	-0.3498405	-0.3482782	+122
17	0.4575349	0.4652710	638	0.7990706	0.7953452	415	0.3466891	0.3450731	114
18	0.4729711	0.4806347	640	0.7915583	0.7877103	428	0.3434304	0.3417612	106
19	0.4882613	0.4958501	641	0.7838014	0.7798318	441	0.3400657	0.3383438	98
20	0.5034008	0.5109128	642	0.7758020	0.7717124	454	0.3365958	0.3348218	89
21	+0.5183855	+0.5258184	-642	-0.7675631	-0.7633542	-467	-0.3330219	-0.3311961	+ 81
22	0.5332109	0.5405624	641	0.7590861	0.7547593	480	0.3293446	0.3274676	73
23	0.5478724	0.5551404	640	0.7503740	0.7459305	494	0.3255653	0.3236377	64
24	0.5623658	0.5695478	639	0.7414290	0.7368699	508	0.3216849	0.3197069	55
25	0.5766861	0.5837802	637	0.7322535	0.7275802	522	0.3177041	0.3156766	46
26	+0.5908295	+0.5978331	-635	-0.7228504	-0.7180645	-536	-0.3136246	-0.3115481	+ 37
27	0.6047907	0.6117018	632	0.7132227	0.7083253	550	0.3094473	0.3073225	28
28	0.6185658	0.6253819	629	0.7033727	0.6983652	564	0.3051737	0.3030010	19
29	0.6321497	0.6388687	626	0.6933034	0.6881876	577	0.3008046	0.2985849	10
30	0.6455382	0.6521578	623	0.6830184	0.6777958	590	0.2963419	0.2940757	+ 1
31	+0.6587268	+0.6652448	-618	-0.6725204	-0.6671928	-603	-0.2917866	-0.2894748	- 8
Feb. 1	0.6717112	0.6781255	613	0.6618133	0.6563825	616	0.2871405	0.2847839	18
2	0.6844871	0.6907957	608	0.6509008	0.6453686	630	0.2824052	0.2800046	27
3	0.6970506	0.7032514	603	0.6397863	0.6341543	643	0.2775823	0.2751385	36
4	0.7093974	0.7154881	598	0.6284732	0.6227433	656	0.2726734	0.2701872	46
5	+0.7215233	+0.7275026	-592	-0.6169654	-0.6111401	-669	-0.2676801	-0.2651525	- 56
6	0.7334255	0.7392914	586	0.6052678	0.5993488	682	0.2626045	0.2600363	65
7	0.7451000	0.7508508	579	0.5933838	0.5873732	695	0.2574481	0.2548403	75
8	0.7565435	0.7621775	572	0.5813176	0.5752174	708	0.2522129	0.2495662	85
9	0.7677526	0.7732684	564	0.5690732	0.5628853	720	0.2469004	0.2442158	95
10	+0.7787245	+0.7841205	-555	-0.5566545	-0.5503814	-732	-0.2415126	-0.2387910	-105
11	0.7894560	0.7947307	546	0.5440663	0.5377097	744	0.2360512	0.2332935	115
12	0.7999443	0.8050065	537	0.5313122	0.5248743	756	0.2305181	0.2277252	125
13	0.8101869	0.8152151	527	0.5183965	0.5118792	768	0.2249150	0.2220876	134
14	0.8201809	0.8250841	517	0.5053229	0.4987281	780	0.2192433	0.2163823	144
15	+0.8299243	+0.8347010	-507	-0.4920953	-0.4851253	-792	-0.2135051	-0.2106116	-154
16	0.8394140	0.8440632	-497	-0.4787183	-0.4719748	-803	-0.2077020	-0.2047766	-164

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.	
Feb. 16	+0.8394140	+0.8440632	-497	-0.4787183	-0.4719748	-803	-0.2077020	-0.2047766	-164
17	0.8486480	0.8531681	486	0.4651953	0.4583805	814	0.2018356	0.1988792	173
18	0.8576233	0.8620133	475	0.4515307	0.4446462	825	0.1959075	0.1929208	183
19	0.8663378	0.8705966	464	0.4377277	0.4307760	836	0.1899193	0.1869035	192
20	0.8747892	0.8789154	452	0.4237914	0.4167740	846	0.1838733	0.1808288	202
21	+0.8829748	+0.8869670	-439	-0.4097247	-0.4026442	-856	-0.1777705	-0.1746986	-211
22	0.8908918	0.8947491	426	0.3955329	0.3883909	866	0.1716133	0.1685146	221
23	0.8985385	0.9022595	413	0.3812189	0.3740176	876	0.1654029	0.1622784	231
24	0.9059119	0.9094955	400	0.3667875	0.3595292	886	0.1591414	0.1559921	241
25	0.9130100	0.9164549	387	0.3522432	0.3449299	895	0.1528308	0.1496575	250
26	+0.9198300	+0.9231351	-373	-0.3375900	-0.3302240	-904	-0.1464727	-0.1432766	-260
27	0.9263700	0.9295344	359	0.3228325	0.3154162	913	0.1400694	0.1368513	269
28	0.9326281	0.9356507	344	0.3079756	0.3005112	922	0.1336227	0.1303838	279
Mar. 1	0.9386019	0.9414814	329	0.2930237	0.2855138	930	0.1271349	0.1238763	288
2	0.9442891	0.9470251	314	0.2779819	0.2704287	938	0.1206081	0.1173306	298
3	+0.9496889	+0.9522803	-299	-0.2628548	-0.2552610	-946	-0.1140442	-0.1107492	-307
4	0.9547991	0.9572451	284	0.2476478	0.2400157	953	0.1074458	0.1041342	316
5	0.9596182	0.9619182	268	0.2323654	0.2246977	960	0.1008148	0.0974878	325
6	0.9641451	0.9662989	251	0.2170130	0.2093118	967	0.0941535	0.0908120	334
7	0.9683793	0.9703861	234	0.2015950	0.1938634	974	0.0874638	0.0841093	343
8	+0.9723193	+0.9741789	-217	-0.1861173	-0.1783573	-980	-0.0807486	-0.0773818	-352
9	0.9759647	0.9776765	199	0.1705841	0.1627984	986	0.0740093	0.0706315	360
10	0.9793145	0.9808787	182	0.1550008	0.1471918	992	0.0672485	0.0638606	369
11	0.9823689	0.9837847	165	0.1393720	0.1315422	998	0.0604680	0.0570711	378
12	0.9851264	0.9863943	147	0.1237029	0.1158547	1003	0.0536702	0.0502653	387
13	+0.9875882	+0.9887079	-129	-0.1079981	-0.1001338	-1007	-0.0468570	-0.0434453	-395
14	0.9897534	0.9907249	111	0.0922623	0.0843840	1012	0.0400304	0.0366126	404
15	0.9916223	0.9924454	93	0.0764996	0.0686098	1016	0.0331922	0.0297694	412
16	0.9931943	0.9938662	74	0.0507151	0.0528159	1020	0.0263444	0.0229175	420
17	0.9944700	0.9949965	55	0.0449128	0.0370066	1024	0.0194890	0.0160590	428
18	+0.9954489	+0.9958272	-36	-0.0297777	-0.0211866	-1028	-0.0126278	-0.0091956	-436
19	0.9961314	0.9953615	-17	-0.0132740	-0.0053604	1031	-0.0057628	-0.0023295	444
20	0.9965174	0.9965993	+3	+0.0025537	+0.0104681	1034	+0.0011040	+0.0045377	451
21	0.9966070	0.9965405	23	0.0183819	0.0262945	1036	0.0079712	0.0114042	458
22	0.9963998	0.9961852	43	0.0342052	0.0421135	1038	0.0148364	0.0182677	465
23	+0.9958965	+0.9955338	+63	+0.0500190	+0.0579212	-1040	+0.0216978	+0.0251264	-472
24	0.9950970	0.9945862	83	0.0658196	0.0737133	1041	0.0285534	0.0319784	479
25	0.9940014	0.9933424	104	0.0816019	0.0894847	1042	0.0354013	0.0388216	486
26	0.9926095	0.9918026	124	0.0973612	0.1052309	1043	0.0422393	0.0456541	493
27	0.9909220	0.9899678	144	0.1130931	0.1209472	1044	0.0490656	0.0524735	499
28	+0.9889398	+0.9878379	+165	+0.1287927	+0.1366289	-1044	+0.0558777	+0.0592779	-505
29	0.9866623	0.9854132	186	0.1444554	0.1522710	1044	0.0626739	0.0660653	511
30	0.9840909	0.9826953	207	0.1600758	0.1678688	1044	0.0694518	0.0728333	517
31	0.9812264	0.9796845	228	0.1756495	0.1834172	1043	0.0762094	0.0795798	523
32	0.9780695	0.9763820	249	0.1911714	0.1989115	1042	0.0829442	0.0863026	528
33	+0.9746218	+0.9727890	+271	+0.2066368	+0.2143467	-1041	+0.0896545	+0.0929997	-533
34	+0.9708839	+0.9689069	+292	+0.2220407	+0.2297180	-1040	+0.0963380	+0.0996690	-538

FOR GREENWICH MEAN NOON AND MIDNIGHT.									
Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.	
Apr. 1	+0.9780695	+0.9763820	+ 249	+0.1911714	+0.1989115	-1042	+0.0829442	+0.0863026	-528
2	0.9746218	0.9727890	271	0.2066368	0.2143467	1041	0.0896545	0.0929997	533
3	0.9708839	0.9689069	292	0.2220407	0.2297180	1040	0.0963380	0.0996690	538
4	0.9668580	0.9647375	314	0.2373782	0.2450207	1038	0.1029926	0.1063084	543
5	0.9625456	0.9602828	335	0.2526448	0.2602500	1036	0.1096161	0.1129156	548
6	+0.9579489	+0.9555439	+ 357	+0.2678358	+0.2754014	-1034	+0.1162067	+0.1194890	-552
7	0.9530683	0.9505228	378	0.2829464	0.2904701	1032	0.1227623	0.1260263	557
8	0.9479074	0.9452224	400	0.2979721	0.3054520	1029	0.1292809	0.1325259	561
9	0.9424680	0.9396442	422	0.3129091	0.3203424	1026	0.1357610	0.1389857	565
10	0.9367515	0.9337904	444	0.3277519	0.3351374	1022	0.1422000	0.1454040	569
11	+0.9307611	+0.9276639	+ 466	+0.3424980	+0.3498332	-1018	+0.1485972	+0.1517793	-572
12	0.9244989	0.9212664	488	0.3571424	0.3644251	1014	0.1549502	0.1581096	575
13	0.9179668	0.9146003	510	0.3716810	0.3789096	1009	0.1612573	0.1643932	578
14	0.9111673	0.9076681	533	0.3861105	0.3932830	1004	0.1675171	0.1706288	581
15	0.9041029	0.9004721	555	0.4004268	0.4075413	999	0.1737280	0.1768145	584
16	+0.8967758	+0.8930143	+ 578	+0.4146261	+0.4216808	- 994	+0.1798881	+0.1829488	-586
17	0.8891880	0.8852972	600	0.4287049	0.4356978	988	0.1859963	0.1890302	588
18	0.8813422	0.8773232	623	0.4426592	0.4495886	982	0.1920505	0.1950569	590
19	0.8732404	0.8690941	645	0.4564854	0.4633493	976	0.1980492	0.2010273	592
20	0.8648846	0.8606122	668	0.4701797	0.4769762	969	0.2039909	0.2069398	594
21	+0.8562773	+0.8518803	+ 690	+0.4837384	+0.4904658	- 962	+0.2098739	+0.2127930	-595
22	0.8474214	0.8429007	713	0.4971580	0.5038143	955	0.2156968	0.2185850	596
23	0.8383187	0.8336756	736	0.5104344	0.5170180	948	0.2214574	0.2243141	597
24	0.8289717	0.8242075	759	0.5235643	0.5300727	940	0.2271546	0.2299787	597
25	0.8193832	0.8144992	782	0.5365429	0.5429746	932	0.2327862	0.2355770	598
26	+0.8095558	+0.8045533	+ 805	+0.5493672	+0.5557201	- 923	+0.2383509	+0.2411074	-598
27	0.7994922	0.7943728	827	0.5620328	0.5683048	914	0.2438465	0.2465680	598
28	0.7891956	0.7839609	849	0.5745357	0.5807253	905	0.2492716	0.2519572	598
29	0.7786691	0.7732204	871	0.5868730	0.5929782	896	0.2546245	0.2572734	598
30	0.7679154	0.7624548	893	0.5990404	0.6050590	886	0.2599036	0.2625150	597
May 1	+0.7569388	+0.7513679	+ 915	+0.6110338	+0.6169642	- 876	+0.2651073	+0.2676803	-596
2	0.7457424	0.7400628	938	0.6228499	0.6286906	865	0.2702338	0.2727676	595
3	0.7343295	0.7285428	961	0.6344855	0.6402340	854	0.2752816	0.2777754	593
4	0.7227038	0.7168128	983	0.6459360	0.6515914	842	0.2802491	0.2827026	591
5	0.7108702	0.7048763	1005	0.6571996	0.6627601	830	0.2851355	0.2875477	589
6	+0.6988317	+0.6927370	+1027	+0.6682725	+0.6737364	- 818	+0.2899390	+0.2923093	-587
7	0.6865927	0.6803990	1049	0.6791516	0.6845176	806	0.2946583	0.2969859	585
8	0.6741566	0.6678656	1071	0.6898341	0.6951011	793	0.2992921	0.3015769	582
9	0.6615272	0.6551423	1093	0.7003179	0.7054837	780	0.3038399	0.3060807	579
10	0.6487109	0.6422328	1115	0.7105986	0.7156627	767	0.3082995	0.3104963	576
11	+0.6357090	+0.6291400	+1137	+0.7206755	+0.7256363	- 753	+0.3126708	+0.3148228	-572
12	0.6225263	0.6158684	1158	0.7305451	0.7354019	739	0.3169522	0.3190590	568
13	0.6091669	0.6024222	1180	0.7402060	0.7449570	724	0.3211431	0.3232042	564
14	0.5956347	0.5888050	1201	0.7495547	0.7542991	709	0.3252423	0.3272572	560
15	0.5819335	0.5750206	1222	0.7588897	0.7634263	694	0.3292489	0.3312172	556
16	+0.5680669	+0.5610730	+1243	+0.7679086	+0.7723364	- 678	+0.3331620	+0.3350831	-551
17	+0.5540390	+0.5469657	+1264	+0.7767093	+0.7810271	- 663	+0.3369804	+0.3388538	-546

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.	
May 17	+0.5540390	+0.5469657	+1264	+0.7767093	+0.7810271	-663	+0.3369804	+0.3388538	-546
18	0.5398533	0.5327024	1285	0.7852895	0.7894962	647	0.3407032	0.3425285	541
19	0.5255135	0.5182873	1306	0.7936469	0.7977414	631	0.3443296	0.3461063	536
20	0.5110240	0.5037241	1326	0.8017794	0.8057604	615	0.3478585	0.3495860	530
21	0.4963881	0.4890166	1346	0.8096843	0.8135510	597	0.3512888	0.3529667	524
22	+0.4816100	+0.4741688	+1366	+0.8173602	+0.8211114	-579	+0.3546196	+0.3562474	-518
23	0.4666935	0.4591844	1386	0.8248043	0.8284386	560	0.3578499	0.3594270	512
24	0.4516423	0.4440680	1406	0.8320142	0.8355308	541	0.3609785	0.3625044	506
25	0.4364618	0.4288238	1425	0.8389880	0.8423856	522	0.3640046	0.3654789	499
26	0.4211549	0.4134561	1444	0.8457232	0.8490007	503	0.3669271	0.3683492	492
27	+0.4057275	+0.3979695	+1463	+0.8522178	+0.8553745	-483	+0.3697450	+0.3711146	-485
28	0.3901828	0.3823681	1482	0.8584704	0.8615047	463	0.3724578	0.3737743	477
29	0.3745260	0.3666570	1501	0.8644777	0.8673891	443	0.3750641	0.3763272	469
30	0.3587617	0.3508408	1519	0.8702388	0.8730265	423	0.3775634	0.3787727	461
31	0.3428948	0.3349244	1537	0.8757519	0.8784148	402	0.3799548	0.3811099	452
June 1	+0.3269303	+0.3189130	+1554	+0.8810151	+0.8835528	-381	+0.3822378	+0.3833384	-443
2	0.3108731	0.3028112	1571	0.8860275	0.8884390	360	0.3844116	0.3854575	434
3	0.2947280	0.2866240	1588	0.8907872	0.8930719	338	0.3864760	0.3874668	425
4	0.2784999	0.2703564	1605	0.8952931	0.8974506	316	0.3884301	0.3893657	416
5	0.2621940	0.2540134	1622	0.8995442	0.9015739	294	0.3902737	0.3911539	407
6	+0.2458151	+0.2375999	+1638	+0.9035397	+0.9054415	-272	+0.3920064	+0.3928312	-398
7	0.2293681	0.2211202	1654	0.9072792	0.9090523	249	0.3936281	0.3943972	388
8	0.2128571	0.2045799	1669	0.9107613	0.9124063	226	0.3951384	0.3958520	378
9	0.1962887	0.1879833	1684	0.9139877	0.9155025	202	0.3965375	0.3971946	368
10	0.1796650	0.1713347	1698	0.9169525	0.9183387	178	0.3978236	0.3984249	358
11	+0.1629928	+0.1546395	+1712	+0.9196605	+0.9209175	-153	+0.3989983	+0.3995436	-347
12	0.1462756	0.1379017	1725	0.9221097	0.9232370	128	0.4000609	0.4005501	336
13	0.1295182	0.1211258	1738	0.9242994	0.9254973	102	0.4010112	0.4014442	325
14	0.1127249	0.1043162	1751	0.9262302	0.9274976	76	0.4018491	0.4022258	314
15	0.0959003	0.0874776	1763	0.9279000	0.9286377	50	0.4025742	0.4028944	303
16	+0.0790486	+0.0706139	+1775	+0.9293103	+0.9299175	-24	+0.4031864	+0.4034502	-291
17	0.0621740	0.0537295	1787	0.9304594	0.9309360	+3	0.4036857	0.4038928	279
18	0.0452810	0.0368293	1798	0.9313474	0.9316935	30	0.4040715	0.4042221	267
19	0.0283748	0.0199177	1809	0.9319741	0.9321892	57	0.4043443	0.4044379	255
20	+0.0114589	+0.0029990	1819	0.9323388	0.9324230	84	0.4045031	0.4045399	243
21	-0.0054614	-0.0139219	+1828	+0.9324416	+0.9323945	+112	+0.4045482	+0.4045280	-230
22	0.0223819	0.0308408	1837	0.9322817	0.9321035	140	0.4044793	0.4044022	218
23	0.0392978	0.0477524	1846	0.9318596	0.9315498	168	0.4042965	0.4041621	205
24	0.0562039	0.0646519	1854	0.9311743	0.9307333	196	0.4039992	0.4038079	192
25	0.0730957	0.0815347	1861	0.9302265	0.9296535	225	0.4035880	0.4033393	179
26	-0.0899682	-0.0983956	+1868	+0.9290148	+0.9283107	+254	+0.4030621	+0.4027564	-166
27	0.1068163	0.1152295	1875	0.9275410	0.9267055	283	0.4024222	0.4020595	153
28	0.1236347	0.1320313	1881	0.9258043	0.9248376	312	0.4016684	0.4012488	140
29	0.1404186	0.1487960	1886	0.9238055	0.9227080	342	0.4008007	0.4003242	126
30	0.1571629	0.1655186	1890	0.9215451	0.9203170	372	0.3998193	0.3992862	113
31	-0.1738624	-0.1821939	+1894	+0.9190239	+0.9176658	+402	+0.3987248	+0.3981351	-99
32	-0.1905123	-0.1988171	+1897	+0.9162427	+0.9147546	+432	+0.3975173	+0.3968714	-85

FOR GREENWICH MEAN NOON, AND MIDNIGHT.										
Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. o.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. o.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. o.	
	Noon.	Midnight.		Noon.	Noon.		Midnight.	Noon.		Noon.
July	1	-0.1738624	-0.1821939	+1894	+0.9190239	+0.9176658	+ 402	+0.3987248	+0.3981351	- 99
	2	0.1905123	0.1988171	1897	0.9162427	0.9147546	432	0.3975173	0.3968714	85
	3	0.2071075	0.2153829	1899	0.9132020	0.9115852	463	0.3961976	0.3954958	71
	4	0.2236428	0.2318866	1901	0.9099040	0.9081585	493	0.3947661	0.3940085	57
	5	0.2401136	0.2483233	1902	0.9063489	0.9044754	524	0.3932232	0.3924102	43
	6	-0.2565152	-0.2646887	+1903	+0.9025383	+0.9005377	+ 554	+0.3915696	+0.3907015	- 29
	7	0.2728432	0.2809780	1903	0.8984738	0.8963466	585	0.3880599	0.3888829	- 14
	8	0.2890926	0.2971865	1902	0.8941565	0.8919038	616	0.3879327	0.3869554	00
	9	0.3052592	0.3133102	1901	0.8895884	0.8872105	647	0.3859509	0.3849193	+ 15
	10	0.3213390	0.3293449	1899	0.8847704	0.8822684	678	0.3838668	0.3827755	30
	11	-0.3373274	-0.3452860	+1897	+0.8797047	+0.8770793	+ 709	+0.3816634	+0.3805246	+ 45
	12	0.3532201	0.3611293	1894	0.8743925	0.8716445	740	0.3793592	0.3781673	59
	13	0.3690132	0.3768712	1890	0.8688354	0.8659652	771	0.3769489	0.3757040	74
	14	0.3847028	0.3925074	1885	0.8630344	0.8600434	802	0.3744327	0.3731354	89
	15	0.4002845	0.4080336	1880	0.8569923	0.8538810	833	0.3718120	0.3704625	104
	16	-0.4157541	-0.4234456	+1875	+0.8507097	+0.8474784	+ 864	+0.3690870	+0.3676855	+119
	17	0.4311077	0.4387398	1869	0.8441876	0.8408378	896	0.3662581	0.3648051	135
	18	0.4463414	0.4539117	1862	0.8374290	0.8339611	927	0.3633265	0.3618222	150
	19	0.4614504	0.4689570	1854	0.8304345	0.8268494	958	0.3602924	0.3587372	166
	20	0.4764309	0.4838717	1845	0.8232060	0.8195044	989	0.3571566	0.3555508	181
	21	-0.4912788	-0.4986516	+1835	+0.8157449	+0.8119277	+1020	+0.3539198	+0.3522638	+196
	22	0.5059895	0.5132918	1824	0.8080530	0.8041210	1051	0.3505828	0.3488768	211
	23	0.5205582	0.5277882	1812	0.8001320	0.7960866	1082	0.3471461	0.3453908	227
	24	0.5349811	0.5421364	1800	0.7919846	0.7878260	1113	0.3436109	0.3418066	243
	25	0.5492535	0.5563320	1788	0.7836114	0.7793413	1143	0.3399779	0.3381250	258
	26	-0.5633713	-0.5703708	+1775	+0.7750157	+0.7706348	+1174	+0.3362481	+0.3343472	+274
	27	0.5773299	0.5842480	1762	0.7661991	0.7617090	1204	0.3324224	0.3304740	289
	28	0.5911245	0.5979590	1748	0.7571648	0.7525666	1234	0.3285021	0.3265068	305
	29	0.6047511	0.6115005	1733	0.7479149	0.7432099	1264	0.3244882	0.3224467	320
	30	0.6182063	0.6248676	1717	0.7384520	0.7336417	1293	0.3203823	0.3182949	335
	31	-0.6314843	-0.6380564	+1701	+0.7287793	+0.7238652	+1322	+0.3161849	+0.3140526	+350
Aug.	1	0.6445829	0.6510630	1684	0.7188997	0.7138830	1351	0.3118981	0.3097213	366
	2	0.6574965	0.6638833	1666	0.7088157	0.7036983	1380	0.3075226	0.3053022	381
	3	0.6702226	0.6765141	1647	0.6985310	0.6933141	1409	0.3030603	0.3007969	396
	4	0.6827572	0.6889515	1628	0.6880484	0.6827342	1438	0.2985123	0.2962067	411
	5	-0.6950965	-0.7011919	+1608	+0.6773718	+0.6719612	+1466	+0.2938802	+0.2915329	+426
	6	0.7072372	0.7132320	1588	0.6665032	0.6609983	1494	0.2891650	0.2867767	441
	7	0.7191760	0.7250690	1567	0.6554468	0.6498492	1522	0.2843683	0.2819400	456
	8	0.7309105	0.7366999	1546	0.6442058	0.6385169	1549	0.2794918	0.2770240	471
	9	0.7424369	0.7481210	1523	0.6327830	0.6270044	1576	0.2745367	0.2720299	486
	10	-0.7537519	-0.7593296	+1500	+0.6211816	+0.6153151	+1602	+0.2695040	+0.2669591	+501
	11	0.7648534	0.7703227	1476	0.6094052	0.6034521	1628	0.2643954	0.2618130	516
	12	0.7757375	0.7810976	1451	0.5974563	0.5914183	1654	0.2592120	0.2565928	530
	13	0.7864024	0.7916512	1426	0.5853385	0.5792172	1679	0.2539554	0.2513000	545
	14	0.7968440	0.8019807	1400	0.5730549	0.5668520	1704	0.2486268	0.2459359	560
	15	-0.8070606	-0.8120832	+1373	+0.5606087	+0.5543253	+1729	+0.2432274	+0.2405015	+574
	16	-0.8170483	-0.8219554	+1346	+0.5480023	+0.5416404	+1753	+0.2377584	+0.2349984	+588

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. o.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. o.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. o.
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.	
Aug. 16	-0.8170483	-0.8219554	+1346	+0.5480023	+0.5416404	+1753	+0.2377584	+0.2349984	+ 588
17	0.8268042	0.8315946	1318	0.5352399	0.5288011	1777	0.2322216	0.2294282	602
18	0.8363260	0.8409978	1290	0.5223243	0.5158099	1800	0.2266183	0.2237919	616
19	0.8456098	0.8501616	1261	0.5092584	0.5026705	1823	0.2209494	0.2180912	630
20	0.8546529	0.8590836	1232	0.4960464	0.4893863	1846	0.2152172	0.2123274	643
21	-0.8634530	-0.8677604	+1202	+0.4826908	+0.4759606	+1868	+0.2094222	+0.2065021	+ 657
22	0.8720058	0.8761889	1172	0.4691961	0.4623974	1889	0.2035670	0.2006170	670
23	0.8803092	0.8843663	1141	0.4555653	0.4487003	1910	0.1976525	0.1946738	684
24	0.8883598	0.8922896	1109	0.4418028	0.4348730	1930	0.1916810	0.1886740	697
25	0.8961551	0.8999560	1077	0.4279116	0.4209194	1950	0.1856534	0.1826194	710
26	-0.9036921	-0.9073633	+1045	+0.4138967	+0.4068441	+1970	+0.1795723	+0.1765121	+ 723
27	0.9109690	0.9145085	1012	0.3997620	0.3926510	1989	0.1734392	0.1703537	736
28	0.9179819	0.9213891	979	0.3855116	0.3783442	2007	0.1672559	0.1641461	748
29	0.9247296	0.9280032	945	0.3711495	0.3639283	2024	0.1610244	0.1578912	760
30	0.9312096	0.9343486	910	0.3566809	0.3494078	2041	0.1547466	0.1515910	772
31	-0.9374198	-0.9404231	+ 874	+0.3421096	+0.3347868	+2057	+0.1484246	+0.1452475	+ 784
Sept. 1	0.9433583	0.9462251	838	0.3274400	0.3200694	2072	0.1420601	0.1388626	795
2	0.9490233	0.9517527	802	0.3126760	0.3052612	2088	0.1356552	0.1324381	806
3	0.9544133	0.9570051	766	0.2978247	0.2903667	2103	0.1292117	0.1259761	817
4	0.9595276	0.9619804	729	0.2828879	0.2753890	2117	0.1227317	0.1194785	828
5	-0.9643636	-0.9666771	+ 692	+0.2678705	+0.2603330	+2131	+0.1162168	+0.1129469	+ 839
6	0.9689207	0.9710942	655	0.2527771	0.2452034	2144	0.1096690	0.1063835	850
7	0.9731976	0.9752306	617	0.2376122	0.2300041	2156	0.1030903	0.0997898	860
8	0.9771931	0.9790850	579	0.2223796	0.2147393	2167	0.0964823	0.0931678	870
9	0.9809062	0.9826569	540	0.2070837	0.1994134	2178	0.0898467	0.0865192	880
10	-0.9843366	-0.9859448	+ 501	+0.1917289	+0.1840305	+2188	+0.0831854	+0.0798457	+ 890
11	0.9874818	0.9889476	462	0.1763188	0.1685943	2198	0.0765002	0.0731491	899
12	0.9903420	0.9916647	422	0.1608576	0.1531096	2207	0.0697926	0.0664312	908
13	0.9929157	0.9940950	382	0.1453505	0.1375803	2216	0.0630649	0.0596939	917
14	0.9952023	0.9962373	342	0.1298000	0.1220103	2224	0.0563184	0.0529388	926
15	-0.9972000	-0.9980904	+ 302	+0.1142116	+0.1064042	+2232	+0.0495552	+0.0461678	+ 935
16	0.9989084	0.9996538	261	0.0985887	0.0907659	2239	0.0427768	0.0393826	943
17	1.0003265	1.0009262	220	0.0829361	0.0750999	2246	0.0359854	0.0325854	951
18	1.0014528	1.0019064	179	0.0672579	0.0594106	2251	0.0291828	0.0257779	958
19	1.0022868	1.0025938	138	0.0515586	0.0437024	2255	0.0223710	0.0189622	965
20	-1.0028273	-1.0028874	+ 96	+0.0358427	+0.0279800	+2259	+0.0155518	+0.0121401	+ 972
21	1.0030739	1.0030866	54	0.0201149	+0.0122480	2262	0.0087274	+0.0053139	978
22	1.0030256	1.0028908	+ 12	+0.0043799	-0.0034890	2264	+0.0018999	-0.0015144	984
23	1.0026822	1.0023996	- 31	-0.0113578	0.0192257	2266	-0.0049286	0.0083425	990
24	1.0020431	1.0016127	73	0.0270924	0.0349574	2267	0.0117559	0.0151684	996
25	-1.0011083	-1.0005298	- 116	-0.0428199	-0.0506793	+2268	-0.0185799	-0.0219900	+1001
26	0.9998773	0.9991507	158	0.0585350	0.0663865	2269	0.0253984	0.0288049	1006
27	0.9983502	0.9974761	201	0.0742330	0.0820738	2269	0.0322092	0.0356110	1011
28	0.9965282	0.9955060	244	0.0899084	0.0977364	2267	0.0390101	0.0424063	1015
29	0.9944102	0.9932411	287	0.1055570	0.1133694	2264	0.0457993	0.0491887	1019
30	-0.9919986	-0.9906827	- 330	-0.1211732	-0.1289678	+2261	-0.0525743	-0.0559559	+1023
31	-0.9892932	-0.9878303	- 374	-0.1367525	-0.1445269	+2258	-0.0593331	-0.0627058	+1026

FOR GREENWICH MEAN NOON AND MIDNIGHT.										
Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.		
Oct.	1	-0.9892932	-0.9878303	-374	-0.1367525	-0.1445269	+2258	-0.0593331	-0.0627058	+1026
	2	0.9862943	0.9846856	417	0.1522899	0.1600414	2254	0.0660736	0.0694364	1029
	3	0.9830041	0.9812496	461	0.1677807	0.1755072	2250	0.0727938	0.0761457	1032
	4	0.9794225	0.9775234	505	0.1832205	0.1909199	2245	0.0794918	0.0828319	1035
	5	0.9755520	0.9735084	548	0.1986049	0.2062748	2239	0.0861657	0.0894929	1037
	6	-0.9713927	-0.9692053	-592	-0.2139290	-0.2215669	+2232	-0.0928134	-0.0961269	+1039
	7	0.9669462	0.9646157	635	0.2291882	0.2367925	2225	0.0994332	0.1027320	1041
	8	0.9622140	0.9597411	679	0.2443790	0.2519471	2216	0.1060232	0.1093064	1041
	9	0.9571973	0.9545829	722	0.2594963	0.2670263	2207	0.1125815	0.1158483	1041
	10	0.9518978	0.9491421	766	0.2745364	0.2820262	2197	0.1191065	0.1223559	1041
	11	-0.9463161	-0.9434199	-809	-0.2894951	-0.2969424	+2187	-0.1255962	-0.1288272	+1041
	12	0.9404537	0.9374178	852	0.3043678	0.3117707	2176	0.1320488	0.1352607	1041
	13	0.9343122	0.9311372	895	0.3191507	0.3265076	2165	0.1384626	0.1416544	1040
	14	0.9278928	0.9245793	938	0.3338402	0.3411474	2153	0.1448357	0.1480064	1039
	15	0.9211968	0.9177453	981	0.3484294	0.3556860	2141	0.1511661	0.1543147	1037
	16	-0.9142252	-0.9106370	-1024	-0.3629165	-0.3701202	+2127	-0.1574520	-0.1605775	+1036
	17	0.9069806	0.9032560	1067	0.3772966	0.3844450	2113	0.1636915	0.1667932	1034
	18	0.8994635	0.8956034	1110	0.3915650	0.3986560	2098	0.1698826	0.1729594	1032
	19	0.8916760	0.8876817	1152	0.4057176	0.4127494	2083	0.1760234	0.1790745	1029
	20	0.8836204	0.8794922	1195	0.4197504	0.4267192	2067	0.1821122	0.1851359	1026
	21	-0.8752976	-0.8710371	-1237	-0.4336560	-0.4405610	+2051	-0.1881458	-0.1911419	+1022
	22	0.8667106	0.8623182	1280	0.4474332	0.4542717	2034	0.1941236	0.1970907	1018
	23	0.8578604	0.8533380	1322	0.4610760	0.4678456	2017	0.2000430	0.2029801	1014
	24	0.8487510	0.8440994	1364	0.4745799	0.4812784	1999	0.2059019	0.2088081	1010
	25	0.8393838	0.8346048	1406	0.4879405	0.4945558	1980	0.2116984	0.2145728	1005
	26	-0.8297625	-0.8248571	-1447	-0.5011535	-0.5077031	+1961	-0.2174308	-0.2202722	+1000
	27	0.8198891	0.8148588	1488	0.5142141	0.5206860	1941	0.2230969	0.2259046	994
	28	0.8097669	0.8046139	1529	0.5271182	0.5335103	1920	0.2286950	0.2314680	988
	29	0.7994000	0.7941253	1570	0.5393617	0.5461720	1898	0.2342233	0.2369607	981
	30	0.7887905	0.7833960	1610	0.5524406	0.5586670	1875	0.2396800	0.2423810	974
	31	-0.7779421	-0.7724293	-1650	-0.5648507	-0.5709313	+1852	-0.2450634	-0.2477272	+966
Nov.	1	0.7668582	0.7612294	1690	0.5770882	0.5831410	1828	0.2503720	0.2529977	958
	2	0.7555432	0.7497999	1729	0.5891492	0.5951127	1803	0.2556040	0.2581908	950
	3	0.7440000	0.7381437	1768	0.6010307	0.6069025	1778	0.2607580	0.2633052	942
	4	0.7322317	0.7262646	1807	0.6127281	0.6185072	1752	0.2658324	0.2683394	933
	5	-0.7202428	-0.7141665	-1846	-0.6242393	-0.6299236	+1726	-0.2708260	-0.2732919	+924
	6	0.7080362	0.7018526	1884	0.6355599	0.6411480	1700	0.2757371	0.2781614	915
	7	0.6956159	0.6893266	1922	0.6466874	0.6521777	1673	0.2805646	0.2829465	905
	8	0.6829851	0.6765919	1959	0.6576184	0.6630091	1645	0.2853070	0.2876458	895
	9	0.6701475	0.6636521	1996	0.6683495	0.6736392	1617	0.2899627	0.2922577	884
	10	-0.6571064	-0.6505109	-2033	-0.6788778	-0.6840649	+1588	-0.2945306	-0.2967812	+873
	11	0.6438659	0.6371718	2070	0.6892001	0.6942829	1559	0.2990094	0.3012148	863
	12	0.6304290	0.6236380	2105	0.6993131	0.7042902	1529	0.3033974	0.3055569	852
	13	0.6167994	0.6099137	2142	0.7092139	0.7140837	1498	0.3076933	0.3098064	841
	14	0.6029812	0.5960025	2177	0.7188993	0.7236602	1467	0.3118959	0.3139617	829
	15	-0.5889779	-0.5819078	-2212	-0.7283659	-0.7330161	+1435	-0.3160036	-0.3180214	+817
	16	-0.5747928	-0.5676336	-2247	-0.7376104	-0.7421487	+1403	-0.3200150	-0.3219842	+804

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.	
Nov. 16	-0.5747928	-0.5676336	-2247	-0.7376104	-0.7421487	+1403	-0.3200150	-0.3219842	+804
17	0.5604305	0.5531841	2281	0.7466304	0.7510549	1369	0.3239288	0.3258486	791
18	0.5458949	0.5385634	2314	0.7554220	0.7597313	1335	0.3277435	0.3296133	777
19	0.5311901	0.5237756	2346	0.7639823	0.7681745	1300	0.3314577	0.3332766	763
20	0.5163204	0.5088252	2378	0.7723076	0.7763815	1265	0.3350698	0.3368374	748
21	-0.5012905	-0.4937168	-2410	-0.7803957	-0.7843498	+1229	-0.3385790	-0.3402944	+733
22	0.4861049	0.4784555	2441	0.7882434	0.7920762	1193	0.3419835	0.3436463	718
23	0.4707689	0.4630456	2472	0.7958479	0.7995580	1156	0.3452825	0.3468918	703
24	0.4552864	0.4474921	2502	0.8032063	0.8067923	1119	0.3484742	0.3500278	687
25	0.4396632	0.4318004	2531	0.8103158	0.8137766	1081	0.3515583	0.3530594	671
26	-0.4239043	-0.4159755	-2560	-0.8171743	-0.8205089	+1042	-0.3545331	-0.3559794	+655
27	0.4080147	0.4000224	2588	0.8237798	0.8269867	1003	0.3573982	0.3587892	639
28	0.3919994	0.3839464	2616	0.8301294	0.8332079	964	0.3601523	0.3614875	622
29	0.3758640	0.3677527	2643	0.8362219	0.8391709	924	0.3627946	0.3640736	605
30	0.3596133	0.3514466	2669	0.8420548	0.8448736	883	0.3653245	0.3665470	588
Dec. 1	-0.3432532	-0.3350337	-2695	-0.8476268	-0.8503141	+842	-0.3677412	-0.3689070	+571
2	0.3267886	0.3185186	2720	0.8529364	0.8554917	800	0.3700442	0.3711526	554
3	0.3102244	0.3019065	2745	0.8579809	0.8604042	758	0.3722324	0.3732836	536
4	0.2935657	0.2852028	2769	0.8627611	0.8650510	716	0.3743060	0.3752994	518
5	0.2768182	0.2684123	2792	0.8672741	0.8694302	673	0.3762638	0.3771992	500
6	-0.2599860	-0.2515402	-2814	-0.8715193	-0.8735412	+630	-0.3781056	-0.3789829	+481
7	0.2430751	0.2345911	2835	0.8754958	0.8773827	586	0.3798310	0.3806498	462
8	0.2260892	0.2175702	2855	0.8792019	0.8809535	541	0.3814392	0.3821993	443
9	0.2090344	0.2004824	2874	0.8826372	0.8842527	496	0.3829300	0.3836311	424
10	0.1919149	0.1833323	2893	0.8858000	0.8872791	451	0.3843027	0.3849447	404
11	-0.1747354	-0.1661250	-2911	-0.8886898	-0.8900320	+405	-0.3855571	-0.3861396	+384
12	0.1575015	0.1488654	2928	0.8913053	0.8925088	359	0.3866623	0.3872148	364
13	0.1402175	0.1315587	2944	0.8936436	0.8947106	313	0.3877075	0.3881707	343
14	0.1228893	0.1142099	2960	0.8957087	0.8966366	266	0.3886039	0.3890069	322
15	0.1055212	0.0968241	2974	0.8974950	0.8982840	219	0.3893796	0.3897221	301
16	-0.0881191	-0.0794065	-2988	-0.8990033	-0.8996528	+171	-0.3900343	-0.3903162	+280
17	0.0706873	0.0619626	3001	0.9002323	0.9007419	123	0.3905677	0.3907889	259
18	0.0532328	0.0444983	3013	0.9011814	0.9015508	75	0.3909796	0.3911397	237
19	0.0357598	0.0270181	3024	0.9018500	0.9020789	+26	0.3912694	0.3913687	216
20	-0.0182740	-0.0095284	3035	0.9022375	0.9023257	-23	0.3914375	0.3914755	194
21	-0.0007819	+0.0079650	-3045	-0.9023435	-0.9022907	-72	-0.3914829	-0.3914598	+173
22	+0.0167115	0.0254567	3054	0.9021674	0.9019737	122	0.3914061	0.3913218	151
23	0.0342001	0.0429409	3062	0.9017095	0.9013748	172	0.3912069	0.3910613	129
24	0.0516784	0.0604118	3069	0.9009695	0.9004937	222	0.3908851	0.3906783	107
25	0.0691403	0.0778632	3075	0.8999475	0.8993312	273	0.3904410	0.3901733	85
26	+0.0865798	+0.0952896	-3081	-0.8986447	-0.8978877	-324	-0.3898751	-0.3895463	+62
27	0.1039917	0.1126854	3085	0.8970605	0.8961632	375	0.3891871	0.3887974	39
28	0.1213699	0.1300445	3088	0.8951960	0.8941592	426	0.3883775	0.3879274	+16
29	0.1387087	0.1473618	3090	0.8930528	0.8918766	477	0.3874471	0.3869366	-7
30	0.1560030	0.1646315	3092	0.8906308	0.8893157	529	0.3863960	0.3858253	30
31	+0.1732468	+0.1818484	-3090	-0.8879315	-0.8864785	-580	-0.3852247	-0.3845942	-53
32	+0.1904353	+0.1990071	-3087	-0.8849566	-0.8833656	-632	-0.3839339	-0.3832437	-76

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	JANUARY.		Day of Month.	FEBRUARY.		Day of Month.	MARCH.	
	True Longitude.	Latitude.		True Longitude.	Latitude.		True Longitude.	Latitude.
1.0	258 11 11.7	-4 22 21.1	1.0	308 45 36.6	-0 35 59.8	1.0	317 50 14.9	+0 14 23.8
1.5	265 23 18.3	3 59 22.3	1.5	315 22 26.0	+0 0 36.8	1.5	324 15 38.9	0 49 27.8
2.0	272 32 31.5	3 32 45.2	2.0	321 55 11.8	0 36 50.6	2.0	330 38 3.8	1 23 36.3
2.5	279 38 7.9	3 3 1.7	2.5	328 23 49.2	1 12 12.9	2.5	336 57 32.5	1 56 25.0
3.0	286 39 29.0	2 30 46.6	3.0	334 48 18.1	1 46 17.4	3.0	343 14 8.2	2 27 31.6
3.5	293 36 2.9	-1 56 36.1	3.5	341 8 41.8	+2 18 40.8	3.5	349 27 54.9	+2 56 36.1
4.0	300 27 24.6	1 21 6.9	4.0	347 25 7.7	2 49 2.4	4.0	355 38 57.7	3 23 21.0
4.5	307 13 16.8	0 44 54.6	4.5	353 37 47.4	3 17 4.8	4.5	1 47 23.0	3 47 31.0
5.0	313 53 30.1	-0 8 33.0	5.0	359 46 56.2	3 42 33.5	5.0	7 53 19.0	4 8 53.4
5.5	320 28 2.8	+0 27 26.7	5.5	5 52 52.9	4 5 16.2	5.5	13 56 56.3	4 27 17.9
6.0	326 57 0.6	+1 2 36.1	6.0	11 55 59.6	+4 25 2.9	6.0	19 58 27.4	+4 42 36.4
6.5	333 20 35.6	1 36 30.3	6.5	17 56 41.5	4 41 45.8	6.5	25 58 7.7	4 54 42.7
7.0	339 39 5.9	2 8 47.5	7.0	23 55 26.6	4 55 19.0	7.0	31 56 15.1	5 3 32.6
7.5	345 52 54.5	2 39 9.0	7.5	29 52 45.0	5 5 37.7	7.5	37 53 10.1	5 9 3.5
8.0	352 2 28.8	3 7 18.8	8.0	35 49 8.9	5 12 38.4	8.0	43 49 16.1	5 11 14.0
8.5	358 8 19.6	+3 33 3.7	8.5	41 45 12.0	+5 16 18.4	8.5	49 44 59.3	+5 10 4.4
9.0	4 11 0.1	3 56 12.2	9.0	47 41 29.1	5 16 36.0	9.0	55 40 48.2	5 5 35.6
9.5	10 11 5.5	4 16 34.8	9.5	53 38 35.5	5 13 30.1	9.5	61 37 13.5	4 57 49.6
10.0	16 9 12.2	4 34 3.3	10.0	59 37 7.0	5 7 0.5	10.0	67 34 48.2	4 46 49.1
10.5	22 5 57.2	4 48 30.8	10.5	65 37 38.9	4 57 7.9	10.5	73 34 6.8	4 32 37.9
11.0	28 1 57.6	+4 59 51.1	11.0	71 40 45.9	+4 43 53.7	11.0	79 35 45.0	+4 15 20.6
11.5	33 57 50.1	5 7 58.9	11.5	77 47 1.2	4 27 20.7	11.5	85 40 19.5	3 55 3.2
12.0	39 54 10.4	5 12 49.8	12.0	83 56 56.1	4 7 33.2	12.0	91 48 26.9	3 31 52.6
12.5	45 51 32.4	5 14 19.6	12.5	90 10 59.6	3 44 37.5	12.5	98 0 43.4	3 5 57.8
13.0	51 50 28.9	5 12 25.3	13.0	96 29 37.1	3 18 42.4	13.0	104 17 44.0	2 37 29.7
13.5	57 51 29.9	+5 7 4.8	13.5	102 53 10.2	+2 49 59.2	13.5	110 40 1.5	+2 6 41.5
14.0	63 55 2.5	4 58 16.9	14.0	109 21 56.0	2 18 42.4	14.0	117 8 5.1	1 33 49.5
14.5	70 1 31.7	4 46 1.9	14.5	115 56 6.2	1 45 10.3	14.5	123 42 19.9	0 59 13.3
15.0	76 11 18.5	4 30 22.2	15.0	122 35 46.3	1 9 45.3	15.0	130 23 5.0	+0 23 16.1
15.5	82 24 40.0	4 11 22.0	15.5	129 20 55.4	+0 32 53.5	15.5	137 10 32.5	-0 13 35.0
16.0	88 41 50.0	+3 49 8.1	16.0	136 11 25.7	-0 4 55.0	16.0	144 4 46.0	-0 50 48.3
16.5	95 2 57.8	3 23 50.2	16.5	143 7 2.5	0 43 6.3	16.5	151 5 39.6	1 27 49.2
17.0	101 28 9.3	2 55 41.3	17.0	150 7 24.2	1 21 3.5	17.0	158 12 56.8	2 3 59.3
17.5	107 57 25.7	2 24 57.7	17.5	157 12 2.5	1 58 7.9	17.5	165 26 10.1	2 38 38.0
18.0	114 30 44.5	1 51 59.2	18.0	164 20 23.0	2 33 39.7	18.0	172 44 40.7	3 11 4.0
18.5	121 8 0.0	+1 17 9.3	18.5	171 31 47.0	-3 6 59.5	18.5	180 7 39.8	-3 40 36.4
19.0	127 49 2.7	0 40 54.7	19.0	178 45 31.9	3 37 29.5	19.0	187 34 9.2	4 6 36.5
19.5	134 33 40.8	+0 3 45.2	19.5	186 0 52.7	4 4 35.3	19.5	195 3 3.6	4 28 30.3
20.0	141 21 39.8	-0 33 47.0	20.0	193 17 4.1	4 27 46.9	20.0	202 33 13.4	4 45 49.7
20.5	148 12 43.7	1 11 7.9	20.5	200 33 21.5	4 46 39.3	20.5	210 3 27.4	4 58 13.5
21.0	155 6 35.0	-1 47 42.5	21.0	207 49 2.8	-5 0 53.6	21.0	217 32 35.8	-5 5 28.7
21.5	162 2 56.2	2 22 55.3	21.5	215 3 29.4	5 10 17.5	21.5	224 59 33.8	5 7 30.9
22.0	169 1 28.6	2 56 11.7	22.0	222 16 7.2	5 14 44.8	22.0	232 23 23.4	5 4 23.6
22.5	176 1 54.3	3 26 58.5	22.5	229 26 27.5	5 14 15.3	22.5	239 43 15.5	4 56 17.4
23.0	183 3 55.5	3 54 45.3	23.0	236 34 7.0	5 8 55.0	23.0	246 58 31.5	4 43 29.6
23.5	190 7 14.9	-4 19 3.4	23.5	243 38 47.5	-4 58 54.6	23.5	254 8 42.9	-4 26 22.4
24.0	197 11 35.6	4 39 28.7	24.0	250 40 15.6	4 44 29.3	24.0	261 13 32.0	4 5 21.6
24.5	204 16 41.2	4 55 41.1	24.5	257 38 23.3	4 25 58.1	24.5	268 12 50.5	3 40 55.8
25.0	211 22 15.6	5 7 23.8	25.0	264 33 6.1	4 3 43.1	25.0	275 6 38.3	3 13 34.7
25.5	218 28 2.5	5 14 25.7	25.5	271 24 22.3	3 38 9.1	25.5	281 55 2.5	2 43 48.9
26.0	225 33 45.6	-5 16 40.1	26.0	278 12 12.8	-3 9 42.6	26.0	288 38 15.5	-2 12 8.6
26.5	232 39 8.0	5 14 5.3	26.5	284 56 40.1	2 38 51.6	26.5	295 16 33.9	1 39 3.9
27.0	239 43 52.3	5 6 44.6	27.0	291 37 47.4	2 6 5.2	27.0	301 50 16.7	1 5 3.7
27.5	246 47 40.5	4 54 46.2	27.5	298 15 38.7	1 31 53.0	27.5	308 19 44.7	-0 30 35.6
28.0	253 50 13.1	4 38 23.1	28.0	304 50 17.9	0 56 44.7	28.0	314 45 19.1	+0 3 53.8
28.5	260 51 10.2	-4 17 53.0	28.5	311 21 48.9	-0 21 9.6	28.5	321 7 20.4	+0 37 59.2
29.0	267 50 12.0	3 53 37.6	29.0	317 50 14.9	+0 14 23.8	29.0	327 26 8.1	1 11 17.0
29.5	274 46 57.9	3 26 2.2	29.5	324 15 38.9	0 49 27.8	29.5	333 42 0.4	1 43 24.9
30.0	281 41 7.6	2 55 36.0	30.0	330 38 3.8	1 23 36.3	30.0	339 55 13.8	2 14 2.2
30.5	288 32 21.6	2 22 49.6	30.5	336 57 32.5	1 56 25.0	30.5	346 6 2.6	2 42 49.9
31.0	295 20 21.7	-1 48 16.0	31.0	343 14 8.2	+2 27 31.6	31.0	352 14 39.5	+3 9 30.7
31.5	302 4 51.5	-1 12 28.1	31.5	349 27 54.9	+2 56 36.1	31.5	358 21 15.7	+3 33 48.9

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	APRIL.		Day of Month.	MAY.		Day of Month.	JUNE.	
	True Longitude.	Latitude.		True Longitude.	Latitude.		True Longitude.	Latitude.
1.0	4 26 1.0	+3 55 31.0	1.0	37 21 20.1	+4 58 41.8	1.0	82 0 59.9	+3 37 14.2
1.5	10 29 4.3	4 14 25.4	1.5	43 17 28.7	4 58 49.1	1.5	88 2 12.0	3 13 35.9
2.0	16 30 34.0	4 30 22.2	2.0	49 13 23.8	4 55 41.4	2.0	94 4 58.0	2 47 38.5
2.5	22 30 38.7	4 43 13.7	2.5	55 9 15.5	4 49 20.8	2.5	100 9 31.7	2 19 36.6
3.0	28 29 27.1	4 52 54.4	3.0	61 5 14.8	4 39 51.0	3.0	106 16 8.4	1 49 46.4
3.5	34 27 9.4	+4 59 20.1	3.5	67 1 33.8	+4 27 17.4	3.5	112 25 5.2	+1 18 25.7
4.0	40 23 56.8	5 2 28.9	4.0	72 58 26.6	4 11 46.5	4.0	118 36 41.2	0 45 53.5
4.5	46 20 2.4	5 2 20.4	4.5	78 56 9.3	3 53 26.6	4.5	124 51 17.2	+0 12 30.3
5.0	52 15 41.6	4 58 55.7	5.0	84 54 59.7	3 32 27.5	5.0	131 9 15.8	-0 21 22.1
5.5	58 11 12.0	4 52 17.4	5.5	90 55 18.8	3 8 59.8	5.5	137 31 0.9	0 55 20.5
6.0	64 6 54.2	+4 42 29.4	6.0	96 57 30.2	+2 43 15.7	6.0	143 56 57.2	-1 29 0.3
6.5	70 3 11.3	4 29 36.6	6.5	103 2 0.0	2 15 28.6	6.5	150 27 29.4	2 1 55.9
7.0	76 0 29.2	4 13 45.2	7.0	109 9 16.9	1 45 53.4	7.0	157 3 1.7	2 33 40.2
7.5	81 59 16.7	3 55 2.5	7.5	115 19 51.4	1 14 46.0	7.5	163 43 56.0	3 3 45.0
8.0	88 0 5.0	3 33 36.6	8.0	121 34 16.1	0 42 24.2	8.0	170 30 31.3	3 31 41.1
8.5	94 3 27.5	+3 9 36.8	8.5	127 53 4.6	+0 9 7.6	8.5	177 23 2.0	-3 56 59.0
9.0	100 9 59.5	2 43 14.0	9.0	134 16 50.7	-0 24 42.7	9.0	184 21 36.4	4 19 9.0
9.5	106 20 17.8	2 14 40.3	9.5	140 46 7.4	0 58 43.3	9.5	191 26 15.1	4 37 41.9
10.0	112 34 59.5	1 44 9.6	10.0	147 21 26.0	1 32 28.4	10.0	198 36 49.5	4 52 10.3
10.5	118 54 41.6	1 11 58.0	10.5	154 3 14.2	2 5 29.9	10.5	205 53 0.8	5 2 9.5
11.0	125 19 59.9	+0 38 24.1	11.0	160 51 54.3	-2 37 17.6	11.0	213 14 19.3	-5 7 18.8
11.5	131 51 28.0	+0 3 48.8	11.5	167 47 42.0	3 7 19.0	11.5	220 40 3.7	5 7 22.8
12.0	138 29 35.0	-0 31 23.3	12.0	174 50 44.1	3 35 0.1	12.0	228 9 22.0	5 2 13.2
12.5	145 14 44.9	1 6 44.7	12.5	182 0 56.0	3 59 46.1	12.5	235 41 12.8	4 51 49.0
13.0	152 7 14.3	1 41 44.4	13.0	189 18 1.4	4 21 2.6	13.0	243 14 27.3	4 36 18.0
13.5	159 7 10.6	-2 15 48.0	13.5	196 41 29.9	-4 38 16.4	13.5	250 47 52.3	-4 15 56.6
14.0	166 14 30.2	2 48 18.7	14.0	204 10 36.9	4 50 58.2	14.0	258 20 12.8	3 51 9.3
14.5	173 28 56.9	3 18 37.6	14.5	211 44 24.2	4 58 43.6	14.5	265 50 15.9	3 22 27.9
15.0	180 50 0.8	3 46 5.2	15.0	219 21 41.6	5 1 15.1	15.0	273 16 53.2	2 50 30.1
15.5	188 16 58.2	4 10 3.1	15.5	227 1 9.0	4 58 24.0	15.5	280 39 4.3	2 15 57.1
16.0	195 48 51.6	-4 29 55.3	16.0	234 41 20.4	-4 50 10.4	16.0	287 55 58.2	-1 39 32.3
16.5	203 24 31.6	4 45 11.1	16.5	242 20 47.0	4 36 44.1	16.5	295 6 54.5	1 1 59.2
17.0	211 2 39.1	4 55 26.4	17.0	249 58 2.8	4 18 24.7	17.0	302 11 24.4	-0 23 59.5
17.5	218 41 49.0	5 0 25.3	17.5	257 31 47.5	3 55 39.2	17.5	309 9 10.6	+0 13 48.2
18.0	226 20 34.0	5 0 1.1	18.0	265 0 50.6	3 29 1.5	18.0	316 0 6.4	0 50 48.6
18.5	233 57 28.7	-4 54 16.7	18.5	272 24 13.4	-2 59 9.9	18.5	322 44 14.5	+1 26 30.9
19.0	241 31 13.9	4 43 24.4	19.0	279 41 10.7	2 26 45.0	19.0	329 21 46.1	2 0 28.8
19.5	249 0 39.8	4 27 44.1	19.5	286 51 11.4	1 52 28.0	19.5	335 52 59.7	2 32 20.3
20.0	256 24 48.3	4 7 42.9	20.0	293 53 58.0	1 16 58.8	20.0	342 18 19.1	3 1 47.1
20.5	263 42 54.9	3 43 52.2	20.5	300 49 25.2	0 40 55.3	20.5	348 38 12.4	3 28 34.5
21.0	270 54 28.9	-3 16 46.5	21.0	307 37 39.0	-0 4 52.2	21.0	354 53 11.0	+3 52 31.0
21.5	277 59 12.8	2 47 1.8	21.5	314 18 53.9	+0 30 39.6	21.5	1 3 48.3	4 13 27.5
22.0	284 57 1.3	2 15 14.1	22.0	320 53 32.1	1 5 12.7	22.0	7 10 38.5	4 31 17.0
22.5	291 47 59.5	1 41 58.2	22.5	327 22 0.8	1 38 23.2	22.5	13 14 16.2	4 45 54.1
23.0	298 32 21.4	1 7 47.2	23.0	333 44 51.2	2 9 50.7	23.0	19 15 16.0	4 57 15.2
23.5	305 10 27.4	-0 33 11.7	23.5	340 2 36.8	+2 39 17.3	23.5	25 14 11.3	+5 5 17.6
24.0	311 42 43.0	+1 1 20.0	24.0	346 15 52.2	3 6 28.1	24.0	31 11 34.4	5 9 59.8
24.5	318 9 36.9	0 35 21.9	24.5	352 25 12.1	3 31 10.4	24.5	37 7 55.7	5 11 21.2
25.0	324 31 39.5	1 8 30.6	25.0	358 31 10.2	3 53 13.2	25.0	43 3 43.9	5 9 22.3
25.5	330 49 21.7	1 40 25.0	25.5	4 34 19.4	4 12 27.4	25.5	48 59 25.5	5 4 4.6
26.0	337 3 14.2	+2 10 46.0	26.0	10 35 10.5	+4 28 45.0	26.0	54 55 24.7	+4 55 30.6
26.5	343 13 46.3	2 39 16.2	26.5	16 34 12.0	4 41 59.7	26.5	60 52 3.6	4 43 44.3
27.0	349 21 25.4	3 5 40.1	27.0	22 31 50.2	4 52 6.2	27.0	66 49 42.1	4 28 50.7
27.5	355 26 37.0	3 29 43.9	27.5	28 28 28.8	4 59 0.5	27.5	72 48 37.7	4 10 56.8
28.0	1 29 44.3	3 51 15.4	28.0	34 24 29.2	5 2 39.9	28.0	78 49 6.1	3 50 11.0
28.5	7 31 7.6	+4 10 3.5	28.5	40 20 10.3	+5 3 2.9	28.5	84 51 21.2	+3 26 43.7
29.0	13 31 4.9	4 25 58.8	29.0	46 15 48.7	5 0 9.4	29.0	90 55 35.1	3 0 47.2
29.5	19 29 51.8	4 38 53.7	29.5	52 11 39.1	4 54 0.9	29.5	97 1 58.9	2 32 35.7
30.0	25 27 42.1	4 48 42.0	30.0	58 7 54.9	4 44 40.3	30.0	103 10 42.5	2 2 25.6
30.5	31 24 47.9	4 55 19.0	30.5	64 4 47.7	4 32 12.2	30.5	109 21 55.2	1 30 35.1
31.0	37 21 20.1	+4 58 41.8	31.0	70 2 28.9	+4 16 42.9	31.0	115 35 46.3	+0 57 24.5
31.5	43 17 28.7	+4 58 49.1	31.5	76 1 9.2	+3 58 20.3	31.5	121 52 24.0	+0 23 15.4

FOR GREENWICH MEAN NOON AND MIDNIGHT.								
Day of Month.	JULY.		Day of Month.	AUGUST.		Day of Month.	SEPTEMBER.	
	True Longitude.	Latitude.		True Longitude.	Latitude.		True Longitude.	Latitude.
1.0	115 35 46.3	+0 57 24.5	1.0	164 8 10.0	-3 15 40.9	1.0	216 26 16.4	-5 11 22.9
1.5	121 52 24.0	+0 23 15.4	1.5	170 55 41.1	3 43 45.9	1.5	223 36 14.5	5 8 23.0
2.0	128 11 57.9	-0 11 28.3	2.0	177 46 18.3	4 8 51.9	2.0	230 45 43.8	5 0 35.1
2.5	134 34 36.9	0 46 21.8	2.5	184 39 50.6	4 30 32.6	2.5	237 54 19.1	4 48 8.2
3.0	141 0 30.6	1 20 59.0	3.0	191 36 6.3	4 48 24.6	3.0	245 1 38.7	4 31 16.6
3.5	147 29 49.2	-1 54 52.9	3.5	198 34 52.2	-5 2 7.6	3.5	252 7 25.1	-4 10 18.7
4.0	154 2 42.9	2 27 35.9	4.0	205 35 54.2	5 11 25.0	4.0	259 11 24.2	3 45 16.8
4.5	160 39 21.9	2 58 39.9	4.5	212 38 58.2	5 16 4.5	4.5	266 13 24.9	3 17 36.8
5.0	167 19 56.0	3 27 37.0	5.0	219 43 48.9	5 15 57.9	5.0	273 13 18.5	2 46 47.4
5.5	174 4 33.6	3 53 59.8	5.5	226 50 9.6	5 11 2.2	5.5	280 10 58.3	2 13 39.4
6.0	180 53 21.6	-4 17 21.0	6.0	233 57 42.4	-5 1 19.3	6.0	287 6 18.7	-1 38 44.8
6.5	187 46 24.6	4 37 15.2	6.5	241 6 8.3	4 46 56.1	6.5	293 59 14.4	1 2 36.8
7.0	194 43 43.3	4 53 18.3	7.0	248 15 6.4	4 28 4.9	7.0	300 49 40.1	-0 25 49.0
7.5	201 45 14.5	5 5 9.2	7.5	255 24 14.5	4 5 3.2	7.5	307 37 30.5	+0 11 5.3
8.0	208 50 50.0	5 12 28.8	8.0	262 33 9.0	3 38 13.1	8.0	314 22 39.5	0 47 33.6
8.5	216 0 15.6	-5 15 2.8	8.5	269 41 24.6	-3 8 1.5	8.5	321 5 0.3	+1 23 4.8
9.0	223 13 10.6	5 12 41.2	9.0	276 48 34.9	2 34 59.2	9.0	327 44 25.7	1 57 9.7
9.5	230 29 7.8	5 5 19.3	9.5	283 54 12.3	1 59 40.4	9.5	334 20 48.1	2 29 21.6
10.0	237 47 33.7	4 52 58.8	10.0	290 57 49.6	1 22 41.7	10.0	340 54 0.2	2 59 16.6
10.5	245 7 48.2	4 35 48.0	10.5	297 58 59.5	0 44 40.7	10.5	347 23 55.4	3 26 34.0
11.0	252 29 6.1	-4 14 2.0	11.0	304 57 15.7	-0 6 15.8	11.0	353 50 28.1	+3 50 56.3
11.5	259 50 38.5	3 48 2.8	11.5	311 52 13.3	+0 31 55.6	11.5	0 13 34.7	4 12 9.5
12.0	267 11 33.6	3 18 18.8	12.0	318 43 30.1	1 9 18.0	12.0	6 33 13.5	4 30 3.0
12.5	274 30 59.5	2 45 23.8	12.5	325 30 46.8	1 45 18.2	12.5	12 49 25.9	4 44 29.6
13.0	281 48 4.4	2 9 56.0	13.0	332 13 47.7	2 19 26.3	13.0	19 2 16.2	4 55 25.0
13.5	289 2 0.3	-1 32 36.4	13.5	338 52 21.2	+2 51 16.6	13.5	25 11 52.0	+5 2 47.0
14.0	296 12 3.8	0 54 7.1	14.0	345 26 20.1	3 20 27.1	14.0	31 18 24.9	5 6 37.0
14.5	303 17 36.9	-0 15 10.1	14.5	351 55 42.0	3 46 40.0	14.5	37 22 9.5	5 6 57.4
15.0	310 18 9.0	+0 23 34.0	15.0	358 20 29.2	4 9 41.3	15.0	43 23 24.8	5 3 52.7
15.5	317 13 16.4	1 1 28.2	15.5	4 40 48.9	4 29 20.9	15.5	49 22 32.8	4 57 28.8
16.0	324 2 43.4	+1 37 58.9	16.0	10 56 52.8	+4 45 32.2	16.0	55 19 58.8	+4 47 52.5
16.5	330 46 22.1	2 12 36.6	16.5	17 8 56.9	4 58 11.1	16.5	61 16 11.7	4 35 11.6
17.0	337 24 12.0	2 44 56.5	17.0	23 17 21.2	5 7 16.1	17.0	67 11 42.7	4 19 34.6
17.5	343 56 19.2	3 14 38.3	17.5	29 22 29.6	5 12 47.8	17.5	73 7 5.5	4 1 10.5
18.0	350 22 56.0	3 41 25.8	18.0	35 24 48.7	5 14 48.4	18.0	79 2 56.1	3 40 9.0
18.5	356 44 20.1	+4 5 6.8	18.5	41 24 47.8	+5 13 21.3	18.5	84 59 51.9	+3 16 40.5
19.0	3 0 53.9	4 25 32.1	19.0	47 22 58.8	5 8 30.8	19.0	90 58 31.3	2 50 56.3
19.5	9 13 3.6	4 42 35.5	19.5	53 19 55.3	5 0 22.3	19.5	96 59 33.5	2 23 8.4
20.0	15 21 17.8	4 56 13.2	20.0	59 16 11.8	4 49 1.8	20.0	103 3 37.4	1 53 30.1
20.5	21 26 8.2	5 6 23.0	20.5	65 12 23.9	4 34 35.7	20.5	109 11 21.2	1 22 16.4
21.0	27 28 7.4	+5 13 4.5	21.0	71 9 7.6	+4 17 11.4	21.0	115 23 21.2	+0 49 43.9
21.5	33 27 49.2	5 16 18.5	21.5	77 6 58.7	3 56 57.1	21.5	121 40 11.7	+0 16 11.5
22.0	39 25 47.9	5 16 6.6	22.0	83 6 32.3	3 34 1.9	22.0	128 2 23.3	-0 17 59.7
22.5	45 22 37.6	5 12 31.2	22.5	89 8 22.4	3 8 36.0	22.5	134 30 21.6	0 52 25.9
23.0	51 18 54.0	5 5 35.7	23.0	95 13 1.4	2 40 51.3	23.0	141 4 26.5	1 26 40.5
23.5	57 15 3.8	+4 55 24.3	23.5	101 20 59.6	+2 11 1.3	23.5	147 44 51.2	-2 0 14.5
24.0	63 11 44.5	4 42 1.9	24.0	107 32 44.5	1 39 21.6	24.0	154 31 40.6	2 32 36.4
24.5	69 9 23.8	4 25 34.5	24.5	113 48 39.8	1 6 9.8	24.5	161 24 50.2	3 3 13.1
25.0	75 8 30.0	4 6 9.4	25.0	120 9 5.7	+0 31 47.0	25.0	168 24 6.0	3 31 30.0
25.5	81 9 28.8	3 43 55.3	25.5	126 34 17.5	-0 3 24.4	25.5	175 29 3.7	3 56 53.1
26.0	87 12 43.5	+3 19 2.4	26.0	133 4 25.6	-0 38 58.5	26.0	182 39 9.2	-4 18 49.6
26.5	93 18 35.2	2 51 42.9	26.5	139 39 34.6	1 14 26.9	26.5	189 53 39.3	4 36 49.4
27.0	99 27 22.1	2 22 11.1	27.0	146 19 43.4	1 49 19.2	27.0	197 11 42.7	4 50 26.9
27.5	105 39 19.1	1 50 43.4	27.5	153 4 44.6	2 23 3.4	27.5	204 32 22.7	4 59 21.7
28.0	111 54 38.8	1 17 38.7	28.0	159 54 24.9	2 55 6.4	28.0	211 54 38.9	5 3 20.0
28.5	118 13 30.6	+0 43 18.3	28.5	166 48 25.3	-3 24 54.7	28.5	219 17 29.9	-5 2 15.6
29.0	124 36 1.1	+0 8 5.6	29.0	173 46 21.1	3 51 55.9	29.0	226 39 56.5	4 56 9.8
29.5	131 2 13.9	-0 27 33.7	29.5	180 47 43.7	4 15 39.7	29.5	234 1 3.5	4 45 11.0
30.0	137 32 10.4	1 3 12.0	30.0	187 51 59.8	4 35 38.4	30.0	241 20 1.9	4 29 34.5
30.5	144 5 48.8	1 38 20.1	30.5	194 58 35.1	4 51 28.4	30.5	248 36 10.7	4 9 41.2
31.0	150 43 5.6	-2 12 28.0	31.0	202 6 53.2	-5 2 50.6	31.0	255 48 57.4	-3 45 56.8
31.5	157 23 55.1	-2 45 5.1	31.5	209 16 18.5	-5 9 31.4	31.5	262 57 57.9	-3 18 50.9

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	OCTOBER.		Day of Month.	NOVEMBER.		Day of Month.	DECEMBER.	
	True Longitude.	Latitude.		True Longitude.	Latitude.		True Longitude.	Latitude.
1.0	255 48 57.4	-3 45 56.8	1.0	307 59 45.5	+0 38 21.7	1.0	343 57 42.1	+3 41 39.7
1.5	262 57 57.9	3 18 50.9	1.5	314 42 28.0	1 13 15.1	1.5	350 21 10.7	4 4 9.6
2.0	270 2 57.0	2 48 54.8	2.0	321 20 5.9	1 46 41.8	2.0	356 40 4.8	4 23 23.5
2.5	277 3 46.6	2 16 41.8	2.5	327 53 1.3	2 18 18.9	2.5	2 54 53.4	4 39 15.3
3.0	284 0 25.2	1 42 45.4	3.0	334 21 37.6	2 47 46.4	3.0	9 6 5.5	4 51 41.1
3.5	290 52 56.5	-1 7 39.2	3.5	340 46 17.7	+3 14 46.8	3.5	15 14 8.8	+5 0 38.4
4.0	297 41 28.1	-0 31 55.5	4.0	347 7 23.9	3 39 5.2	4.0	21 19 29.2	5 6 6.7
4.5	304 26 10.2	+0 3 54.4	4.5	353 25 17.0	4 0 28.9	4.5	27 22 30.6	5 8 6.7
5.0	311 7 14.5	0 39 20.3	5.0	359 40 15.8	4 18 47.6	5.0	33 23 35.1	5 6 40.8
5.5	317 44 52.7	1 13 54.0	5.5	5 52 37.2	4 33 53.0	5.5	39 23 3.0	5 1 52.6
6.0	324 19 16.3	+1 47 9.4	6.0	12 2 35.6	+4 45 39.1	6.0	45 21 12.0	+4 53 47.1
6.5	330 50 35.9	2 18 42.2	6.5	18 10 23.7	4 54 1.8	6.5	51 18 18.3	4 42 30.9
7.0	337 19 0.4	2 48 10.5	7.0	24 16 12.1	4 58 58.9	7.0	57 14 36.7	4 28 11.6
7.5	343 44 37.0	3 15 14.7	7.5	30 20 10.3	5 0 30.3	7.5	63 19 20.7	4 10 58.8
8.0	350 7 31.4	3 39 37.5	8.0	36 22 26.7	4 58 38.1	8.0	69 5 43.2	3 51 3.2
8.5	356 27 47.7	+4 1 4.4	8.5	42 23 8.9	+4 53 26.0	8.5	75 0 56.3	+3 28 36.7
9.0	2 45 28.7	4 19 23.7	9.0	48 22 24.8	4 44 59.5	9.0	80 56 12.3	3 3 52.8
9.5	9 0 36.4	4 34 26.1	9.5	54 20 22.7	4 33 25.9	9.5	86 51 43.8	2 37 6.3
10.0	15 13 12.9	4 46 5.0	10.0	60 17 11.9	4 18 54.1	10.0	92 47 44.3	2 8 32.9
10.5	21 23 20.2	4 54 16.6	10.5	66 13 3.5	4 1 34.2	10.5	98 44 28.3	1 38 29.5
11.0	27 31 1.6	+4 58 59.7	11.0	72 8 10.1	+3 41 37.8	11.0	104 42 11.6	+1 7 13.8
11.5	33 36 21.7	5 0 15.1	11.5	78 2 46.7	3 19 17.3	11.5	110 41 12.0	0 35 4.5
12.0	39 39 27.1	4 58 5.8	12.0	83 57 10.9	2 54 46.4	12.0	116 41 49.0	+0 2 20.8
12.5	45 40 26.7	4 52 36.9	12.5	89 51 43.2	2 28 19.4	12.5	122 44 24.1	-0 30 37.3
13.0	51 39 32.4	4 43 55.1	13.0	95 46 46.6	2 0 11.1	13.0	128 49 20.8	1 3 29.1
13.5	57 36 59.1	+4 32 8.5	13.5	101 42 47.2	+1 30 37.5	13.5	134 57 4.4	-1 35 53.6
14.0	63 33 4.8	4 17 26.2	14.0	107 40 14.2	0 59 54.9	14.0	141 8 2.0	2 7 29.0
14.5	69 28 10.9	3 59 58.5	14.5	113 39 39.2	+0 28 20.1	14.5	147 22 42.1	2 37 53.1
15.0	75 22 42.1	3 39 56.3	15.0	119 41 36.5	-0 3 48.8	15.0	153 41 33.8	3 6 43.2
15.5	81 17 6.1	3 17 31.3	15.5	125 46 41.6	0 36 13.4	15.5	160 5 6.7	3 33 35.7
16.0	87 11 54.2	+2 52 55.8	16.0	131 55 32.5	-1 8 33.9	16.0	166 33 49.0	-3 58 6.7
16.5	93 7 40.1	2 26 22.7	16.5	138 8 47.5	1 40 29.4	16.5	173 8 7.5	4 19 52.1
17.0	99 5 0.1	1 58 5.5	17.0	144 27 4.6	2 11 37.7	17.0	179 48 25.9	4 38 27.6
17.5	105 4 32.4	1 28 18.7	17.5	150 51 0.8	2 41 35.0	17.5	186 35 3.9	4 53 28.9
18.0	111 6 56.8	0 57 17.6	18.0	157 21 11.1	3 9 56.1	18.0	193 28 14.9	5 4 32.9
18.5	117 12 54.4	+0 25 18.7	18.5	163 58 5.8	-3 36 14.2	18.5	200 28 5.0	-5 11 18.2
19.0	123 23 5.8	-0 7 20.0	19.0	170 42 10.0	4 0 1.2	19.0	207 34 31.6	5 13 25.6
19.5	129 38 11.2	0 40 18.7	19.5	177 33 41.5	4 20 48.1	19.5	214 47 21.4	5 10 40.0
20.0	135 58 48.9	1 13 15.7	20.0	184 32 48.4	4 38 5.8	20.0	222 6 10.1	5 2 51.2
20.5	142 25 33.8	1 45 47.2	20.5	191 39 27.8	4 51 26.0	20.5	229 30 21.9	4 49 55.4
21.0	148 58 56.7	-2 17 27.0	21.0	198 53 24.1	-5 0 22.3	21.0	236 59 9.4	-4 31 56.2
21.5	155 39 21.9	2 47 46.5	21.5	206 14 7.5	5 4 32.1	21.5	244 31 34.5	4 9 5.8
22.0	162 27 5.9	3 16 15.2	22.0	213 40 54.5	5 3 37.7	22.0	252 6 30.0	3 41 44.6
22.5	169 22 15.4	3 42 21.1	22.5	221 12 48.1	4 57 28.6	22.5	259 42 42.8	3 10 22.2
23.0	176 24 46.0	4 5 31.1	23.0	228 48 38.7	4 46 2.3	23.0	267 18 56.2	2 35 35.3
23.5	183 34 20.7	-4 25 12.5	23.5	236 27 7.6	-4 29 25.4	23.5	274 53 53.1	-1 58 7.0
24.0	190 50 29.4	4 40 54.5	24.0	244 6 50.2	4 7 54.3	24.0	282 26 19.8	1 18 44.8
24.5	198 12 28.4	4 52 9.7	24.5	251 46 19.7	3 41 54.4	24.5	289 55 8.0	-0 38 17.7
25.0	205 39 21.8	4 58 35.4	25.0	259 24 11.4	3 11 59.3	25.0	297 19 18.3	+0 2 25.3
25.5	213 10 2.8	4 59 55.4	25.5	266 59 6.2	2 38 48.8	25.5	304 38 0.9	0 42 37.6
26.0	220 43 16.8	-4 56 2.1	26.0	274 29 54.1	-2 3 7.1	26.0	311 50 37.2	+1 21 36.6
26.5	228 17 43.7	4 46 56.0	26.5	281 55 36.7	1 25 40.2	26.5	318 56 40.2	1 58 44.7
27.0	235 52 3.6	4 32 46.7	27.0	289 15 28.1	0 47 14.2	27.0	325 55 54.1	2 33 30.4
27.5	243 24 58.5	4 13 52.7	27.5	296 28 55.8	-0 8 33.1	27.5	332 48 13.4	3 5 27.9
28.0	250 55 17.2	3 50 39.7	28.0	303 35 40.0	+0 29 42.4	28.0	339 33 41.8	3 34 17.2
28.5	258 21 57.3	-3 23 39.7	28.5	310 35 32.7	+1 6 55.7	28.5	346 12 30.8	+3 59 43.4
29.0	265 44 7.6	2 53 28.8	29.0	317 28 36.1	1 42 35.0	29.0	352 44 59.0	4 1 36.5
29.5	273 1 9.4	2 20 45.8	29.5	324 15 0.6	2 16 13.7	29.5	359 11 29.9	4 39 50.0
30.0	280 12 35.6	1 46 10.5	30.0	330 55 4.2	2 47 28.8	30.0	5 32 30.9	4 54 21.0
30.5	287 18 10.9	1 10 21.8	30.5	337 29 9.3	3 16 2.3	30.5	11 48 32.3	5 5 8.7
31.0	294 17 50.6	-0 33 57.3	31.0	343 57 42.1	+3 41 39.7	31.0	18 0 6.2	+5 12 14.6
31.5	301 11 38.5	+0 2 27.9	31.5	350 21 10.7	+4 4 9.6	31.5	24 7 45.2	+5 15 41.7

FOR GREENWICH MEAN NOON.								
Date.	THE MOON'S EQUATOR.			Mean Longitude of the Moon.	Mean Solar Days.	Motion of ϵ		
	Inclination to the Earth's Equator.	Δ Ascending Node on Earth's Equator to Ascending Node on Ecliptic.	Ω Ascending Node on Earth's Equator.					
Jan. 0	22 23.4	134 43.9	2 38.5	242 17.4	0.1	1	19.06	
10	22 24.0	134 10.8	2 40.0	14 3.2	0.2	2	38.12	
20	22 24.6	133 37.7	2 41.5	145 49.1	0.3	3	57.18	
30	22 25.2	133 4.6	2 42.9	277 34.9	0.4	5	16.23	
Feb. 9	22 25.8	132 31.5	2 44.4	49 20.7	0.5	6	35.29	
19	22 26.4	131 58.3	2 45.9	181 6.6	0.6	7	54.35	
March 1	22 27.0	131 25.3	2 47.3	312 52.4	0.7	9	13.41	
11	22 27.6	130 52.2	2 48.7	84 38.2	0.8	10	32.47	
21	22 28.3	130 19.2	2 50.1	216 24.1	0.9	11	51.53	
31	22 28.9	129 46.1	2 51.5	348 9.9	1.0	13	10.58	
April 10	22 29.5	129 13.0	2 52.9	119 55.7	2.0	26	21.17	
20	22 30.1	128 40.0	2 54.2	251 41.6	3.0	39	31.75	
30	22 30.8	128 7.0	2 55.5	23 27.4	4.0	52	42.33	
May 10	22 31.4	127 34.0	2 56.9	155 13.2	5.0	65	52.92	
20	22 32.1	127 1.1	2 58.2	286 59.1	6.0	79	3.50	
30	22 32.7	126 28.1	2 59.5	58 44.9	7.0	92	14.09	
June 9	22 33.3	125 55.2	3 0.7	190 30.7	8.0	105	24.67	
19	22 33.9	125 22.3	3 1.9	322 16.6	9.0	118	35.25	
29	22 34.6	124 49.4	3 3.2	94 2.4	10.0	131	45.84	
July 9	22 35.3	124 16.5	3 4.4	225 48.2				
19	22 36.0	123 43.6	3 5.7	357 34.1	Hours.	0	32.94	
29	22 36.7	123 10.8	3 6.8	129 19.9	1	1	5.88	
Aug. 8	22 37.4	122 38.0	3 7.9	261 5.8	2	2	38.82	
18	22 38.1	122 5.2	3 9.1	32 51.6	3	3	11.76	
28	22 38.8	121 32.4	3 10.2	164 37.4	4	4	44.70	
Sept. 7	22 39.5	120 59.6	3 11.3	296 23.3	5	5	17.65	
17	22 40.2	120 26.9	3 12.3	68 9.1	6	6	50.59	
27	22 40.9	119 54.1	3 13.4	199 54.9	7	7	23.53	
Oct. 7	22 41.7	119 21.4	3 14.4	331 40.8	8	8	56.47	
17	22 42.4	118 48.6	3 15.5	103 26.6	9	9	29.41	
27	22 43.1	118 15.9	3 16.6	235 12.4	10	10	2.35	
Nov. 6	22 43.8	117 43.3	3 17.5	6 58.3	11	11	35.29	
16	22 44.6	117 10.6	3 18.5	138 44.1	12	12	8.23	
26	22 45.3	116 37.9	3 19.4	270 30.0	13	13	41.17	
Dec. 6	22 46.1	116 5.3	3 20.4	42 15.8	14	14	14.11	
16	22 46.8	115 32.7	3 21.4	174 1.6	15	15	47.06	
26	22 47.6	115 0.1	3 22.3	305 47.5	16	16	20.00	
36	22 48.3	114 27.5	3 23.1	77 33.3	17	17	52.94	
					18	18	25.88	
					19	19	58.82	
					20	20	31.76	
					21	21	4.70	
					22	22	37.64	
					23	23		

TABLE FOR THE LIBRATION OF THE MOON.

Argument, $(\Omega - \lambda)$ or $(\Omega - \lambda - 180^\circ)$.

$\Omega - \lambda$	$\Delta \lambda$	$\frac{1}{a}$	B		$\Omega - \lambda$	$\Delta \lambda$	$\frac{1}{a}$	B	
.
0	0.0	39	0 0.0	180	46	0.6	56	1 3.9	134
1	0.0	39	0 1.6	179	47	0.6	57	1 4.9	133
2	0.0	39	0 3.1	178	48	0.6	58	1 6.0	132
3	0.1	39	0 4.7	177	49	0.6	59	1 7.0	131
4	0.1	39	0 6.2	176	50	0.6	60	1 8.0	130
5	0.1	39	0 7.7	175	51	0.6	62	1 9.0	129
6	0.2	39	0 9.3	174	52	0.6	63	1 10.0	128
7	0.2	39	0 10.8	173	53	0.5	64	1 10.9	127
8	0.2	39	0 12.4	172	54	0.5	66	1 11.8	126
9	0.2	39	0 13.9	171	55	0.5	67	1 12.7	125
10	0.2	39	0 15.4	170	56	0.5	69	1 13.6	124
11	0.3	39	0 16.9	169	57	0.5	71	1 14.5	123
12	0.3	40	0 18.5	168	58	0.5	73	1 15.3	122
13	0.3	40	0 20.0	167	59	0.5	75	1 16.1	121
14	0.3	40	0 21.5	166	60	0.5	77	1 16.9	120
15	0.3	40	0 23.0	165	61	0.5	80	1 17.6	119
16	0.3	40	0 24.5	164	62	0.5	83	1 18.4	118
17	0.3	40	0 26.0	163	63	0.5	86	1 19.1	117
18	0.3	41	0 27.4	162	64	0.5	89	1 19.8	116
19	0.4	41	0 28.9	161	65	0.4	92	1 20.4	115
20	0.4	41	0 30.4	160	66	0.4	95	1 21.1	114
21	0.4	41	0 31.8	159	67	0.4	99	1 21.7	113
22	0.4	42	0 33.2	158	68	0.4	103	1 22.3	112
23	0.4	42	0 34.7	157	69	0.4	108	1 22.9	111
24	0.4	42	0 36.1	156	70	0.4	113	1 23.4	110
25	0.4	43	0 37.5	155	71	0.4	119	1 23.9	109
26	0.5	43	0 38.9	154	72	0.4	125	1 24.4	108
27	0.5	43	0 40.3	153	73	0.4	132	1 24.9	107
28	0.5	44	0 41.7	152	74	0.3	141	1 25.3	106
29	0.5	44	0 43.1	151	75	0.3	150	1 25.7	105
30	0.5	45	0 44.4	150	76	0.3	160	1 26.1	104
31	0.5	45	0 45.7	149	77	0.3	172	1 26.5	103
32	0.5	46	0 47.0	148	78	0.2	186	1 26.8	102
33	0.5	46	0 48.4	147	79	0.2	202	1 27.1	101
34	0.5	47	0 49.7	146	80	0.2	222	1 27.4	100
35	0.5	47	0 51.0	145	81	0.2	247	1 27.7	99
36	0.5	48	0 52.2	144	82	0.2	278	1 27.9	98
37	0.5	48	0 53.4	143	83	0.1	318	1 28.1	97
38	0.6	49	0 54.7	142	84	0.1	370	1 28.3	96
39	0.6	50	0 55.9	141	85	0.1	440	1 28.5	95
40	0.6	50	0 57.1	140	86	0.1	555	1 28.6	94
41	0.6	51	0 58.3	139	87	0.1	740	1 28.7	93
42	0.6	52	0 59.4	138	88	0.0	1110	1 28.7	92
43	0.6	53	1 0.6	137	89	0.0	2220	1 28.8	91
44	0.6	54	1 1.7	136	90	0.0	∞	1 28.8	90
45	0.6	55	1 2.8	135					
	$\Delta \lambda$	$\frac{1}{a}$	B	$\Omega - \lambda$		$\Delta \lambda$	$\frac{1}{a}$	B	$\Omega - \lambda$

 $\Delta \lambda$ has the sign of $\tan (\lambda - \Omega)$ a has the sign of $\cos (\Omega - \lambda)$ B has the sign of $\sin (\Omega - \lambda)$

FOR GREENWICH MEAN NOON.

Date.	Apparent Obliquity of the Ecliptic. (HANSEN.)	Equation of Equinoxes. (HANSEN.)		Precession of Equinoxes in Longitude.	The Sun's		Mean Longitude of Moon's Ascending Node.
		In Longitude.	In R. A.		Aberration.	Hor. Par.	
Jan. 0	23 27 15.71	+ 12.02	+ 0.735	0.00	- 20.80	9.00	317 9.9
10	15.73	12.52	0.766	1.38	20.79	9.00	316 38.1
20	15.81	12.90	0.789	2.75	20.77	8.99	316 6.4
30	15.91	13.14	0.804	4.13	20.74	8.98	315 34.6
Feb. 9	16.03	13.24	0.810	5.50	20.71	8.96	315 2.8
19	23 27 16.14	+ 13.20	+ 0.807	6.88	- 20.67	8.94	314 31.1
March 1	16.21	13.01	0.796	8.26	20.63	8.92	313 59.3
11	16.22	12.75	0.780	9.63	20.57	8.90	313 27.5
21	16.17	12.44	0.761	11.01	20.51	8.87	312 55.7
31	16.06	12.13	0.742	12.38	20.45	8.85	312 24.0
April 10	23 27 15.89	+ 11.87	+ 0.726	13.76	- 20.39	8.82	311 52.2
20	15.66	11.73	0.717	15.14	20.34	8.80	311 20.4
30	15.40	11.69	0.715	16.51	20.29	8.78	310 48.6
May 10	15.15	11.79	0.721	17.89	20.24	8.76	310 16.9
20	14.91	12.04	0.736	19.26	20.19	8.74	309 45.1
30	23 27 14.70	+ 12.40	+ 0.758	20.64	- 20.16	8.72	309 13.3
June 9	14.52	12.85	0.786	22.02	20.13	8.71	308 41.6
19	14.41	13.35	0.816	23.39	20.11	8.71	308 9.8
29	14.34	13.87	0.848	24.77	20.11	8.70	307 38.0
July 9	14.35	14.34	0.877	26.14	20.10	8.70	307 6.2
19	23 27 14.39	+ 14.72	+ 0.900	27.52	- 20.12	8.71	306 34.5
29	14.47	14.99	0.917	28.90	20.14	8.72	306 2.7
Aug. 8	14.56	15.14	0.926	30.27	20.17	8.73	305 30.9
18	14.66	15.15	0.927	31.65	20.20	8.75	304 59.1
28	14.73	15.03	0.919	33.02	20.24	8.77	304 27.4
Sept. 7	23 27 14.78	+ 14.79	+ 0.905	34.40	- 20.29	8.79	303 55.6
17	14.75	14.50	0.887	35.78	20.35	8.81	303 23.8
27	14.67	14.17	0.867	37.15	20.41	8.83	302 52.1
Oct. 7	14.53	13.86	0.848	38.53	20.47	8.86	302 20.3
17	14.33	13.61	0.832	39.90	20.53	8.88	301 48.5
27	23 27 14.07	+ 13.46	+ 0.823	41.28	- 20.59	8.91	301 16.7
Nov. 6	13.80	13.46	0.823	42.66	20.64	8.93	300 45.0
16	13.55	13.62	0.833	44.03	20.69	8.95	300 13.2
26	13.28	13.91	0.851	45.41	20.73	8.97	299 41.4
Dec. 6	13.08	14.31	0.875	46.78	20.76	8.98	299 9.7
16	23 27 12.94	+ 14.79	+ 0.905	48.16	- 20.78	8.99	298 37.9
26	12.84	15.33	0.938	49.54	20.79	9.00	298 6.1
36	23 27 12.82	+ 15.83	+ 0.968	50.91	- 20.79	9.00	297 34.3

Mean Obliquity, 1897.0, 23° 27' 9".42 (HANSEN).

Mean Obliquity, 1897.0, 23° 27' 9".15 (PETERS).

Precession for 1897 50".2631 log 1.70125

Precession in a Solar Day 0".1377 log 9.13867

Precession in a Sidereal Day 0".1372 log 9.13748

Sun's Mean Equatorial Horizontal Parallax 8".848 log 0.94685

Daily Motion

of Ω

-3'.177

PART II

ASTRONOMICAL EPHEMERIS

FOR THE

MERIDIAN OF WASHINGTON.

FORMULÆ FOR THE REDUCTION OF THE POSITIONS OF THE FIXED STARS, USING THE NOTATION OF BESSEL, AND THE CONSTANTS OF PETERS AND STRUVE.

NOTATION.

- τ , the time, reckoned in units of one year, from the beginning of the Besselian fictitious year, (1896, December 30^d.376 = 1897, January 0^d.0—0^d.624, Washington mean time),
 a_0, δ_0 , the star's mean right ascension and declination at the beginning of the fictitious year,
 α, δ , the star's apparent right ascension and declination at the time τ ,
 μ, μ' , the annual proper motion in right ascension and declination,
 \odot , the sun's true longitude,
 Ω , the longitude of the moon's ascending node,
 ω , the obliquity of the ecliptic,
 Γ , the longitude of the sun's perigee,
 Γ' , the longitude of the moon's perigee,
 ζ , the moon's mean longitude.

BESSELIAN STAR-NUMBERS.

$$\begin{aligned} A = & \tau - 0.34251 \sin \Omega & - 0.00011 \sin (3 \odot - \Gamma) \\ & + 0.00410 \sin 2 \Omega & - 0.00005 \sin 2 (\odot - \Omega) \\ & - 0.02519 \sin 2 \odot & + 0.00010 \sin 2 (\odot - \Gamma') \\ & + 0.00293 \sin (\odot + 81^\circ 59'). & + 0.00009 \sin (2 \Gamma' - \Omega) \\ & + 0.00025 \sin (2 \odot - \Omega) & + 0.00005 \cos \Gamma' \\ & - 0.00405 \sin 2 \zeta & + 0.00004 \sin 2 \Gamma' \\ & + 0.00135 \sin (\zeta - \Gamma') \\ B = & - 9.2240 \cos \Omega & - 0.0027 \cos (3 \odot - \Gamma) \\ & + 0.0895 \cos 2 \Omega & + 0.0067 \cos (2 \odot - \Omega) \\ & - 0.5506 \cos 2 \odot & + 0.0024 \cos (2 \Gamma' - \Omega) \\ & - 0.0092 \cos (\odot + 281^\circ 10') & - 0.0023 \sin \Gamma' \\ & - 0.0885 \cos 2 \zeta & + 0.0008 \cos 2 \Gamma' \\ C = & - 20.4451 \cos \omega \cos \odot \\ D = & - 20.4451 \sin \odot \\ E = & - 0.0451 \sin \Omega + 0''.0014 \sin 2 \Omega - 0''.0032 \sin 2 \odot \end{aligned}$$

BESSEL'S Star-Constants.

$$\begin{aligned} a &= 3''.07267 + 1''.33682 \sin a_0 \tan \delta_0 = \text{precession in right ascension} \\ b &= \frac{1}{18} \cos a_0 \tan \delta_0 \\ c &= \frac{1}{18} \cos a_0 \sec \delta_0 \\ d &= \frac{1}{18} \sin a_0 \sec \delta_0 \\ a' &= 20''.0523 \cos a_0 = \text{precession in declination} \\ b' &= -\sin a_0 \\ c' &= \tan \omega \cos \delta_0 - \sin a_0 \sin \delta_0 \\ d' &= \cos a_0 \sin \delta_0 \end{aligned}$$

Reduction to Apparent Position.

$$\begin{aligned} \alpha &= a_0 + \tau \mu + Aa + Bb + Cc + Dd + \frac{1}{18} E & (\text{in time}) \\ \delta &= \delta_0 + \tau \mu' + Aa' + Bb' + Cc' + Dd' & (\text{in arc}) \end{aligned}$$

INDEPENDENT STAR-NUMBERS.

$$\begin{aligned} f &= 46''.0900 A + E \text{ (in arc)} = 3''.07267 A + \frac{1}{18} E & (\text{in time}) \\ g \sin G &= B & h \sin H &= C \\ g \cos G &= 20''.0523 A & h \cos H &= D & i &= C \tan \omega \end{aligned}$$

Reduction to Apparent Position.

$$\begin{aligned} \alpha &= a_0 + f + \tau \mu + \frac{1}{18} g \sin (G + a_0) \tan \delta_0 + \frac{1}{18} h \sin (H + a_0) \sec \delta_0 & (\text{in time}) \\ \delta &= \delta_0 + \tau \mu' + g \cos (G + a_0) + h \cos (H + a_0) \sin \delta_0 + i \cos \delta_0 & (\text{in arc}) \end{aligned}$$

NOTES.—(1) The independent star-numbers are more convenient, when only one or two apparent positions of a star are required, or when BESSEL'S star-constants are not known with sufficient accuracy. Otherwise, the Besselian star-numbers are more convenient.

(2) In using the star-constants of the *British Association Catalogue*, $a, b, c, d, a', b', c', d'$, must be changed to $c, d, a, b, -c', -d', -a', -b'$, respectively.

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.	Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.
Jan. 0	+9.3803	-0.7899	-0.5581	+1.3024	Feb. 15	+9.5977	-0.8282	-1.2006	+1.0365
1	9.3906	0.7889	0.5957	1.3008	16	9.5999	0.8314	1.2053	1.0240
2	9.4008	0.7892	0.6302	1.2990	17	9.6015	0.8339	1.2098	1.0111
3	9.4102	0.7909	0.6620	1.2972	18	9.6026	0.8354	1.2142	0.9978
4	9.4183	0.7935	0.6915	1.2952	(10.0) 19	9.6036	0.8357	1.2185	0.9840
h (7.0) 5	+9.4250	-0.7966	-0.7190	+1.2930	20	+9.6049	-0.8349	-1.2226	+0.9696
6	9.4300	0.7996	0.7447	1.2907	21	9.6069	0.8333	1.2265	0.9544
7	9.4336	0.8020	0.7689	1.2882	22	9.6097	0.8313	1.2302	0.9384
8	9.4364	0.8033	0.7916	1.2856	23	9.6134	0.8295	1.2336	0.9217
9	9.4389	0.8034	0.8131	1.2828	24	9.6176	0.8284	1.2368	0.9042
10	+9.4419	-0.8024	-0.8334	+1.2799	25	+9.6222	-0.8282	-1.2399	+0.8858
11	9.4457	0.8005	0.8525	1.2768	26	9.6266	0.8293	1.2429	0.8665
12	9.4507	0.7983	0.8708	1.2735	27	9.6306	0.8314	1.2458	0.8462
13	9.4569	0.7963	0.8883	1.2701	28	9.6338	0.8341	1.2485	0.8249
14	9.4640	0.7951	0.9051	1.2665	Mar. 1	9.6360	0.8370	1.2511	0.8024
15	+9.4716	-0.7951	-0.9211	+1.2627	2	+9.6373	-0.8396	-1.2536	+0.7785
16	9.4792	0.7964	0.9364	1.2588	3	9.6378	0.8414	1.2559	0.7530
17	9.4862	0.7989	0.9510	1.2547	4	9.6380	0.8421	1.2580	0.7258
18	9.4922	0.8021	0.9650	1.2504	5	9.6382	0.8416	1.2599	0.6966
19	9.4971	0.8057	0.9783	1.2460	(11.0) 6	9.6387	0.8400	1.2617	0.6651
h (8.0) 20	+9.5008	-0.8089	-0.9909	+1.2414	7	+9.6399	-0.8378	-1.2634	+0.6313
21	9.5037	0.8113	1.0031	1.2366	8	9.6420	0.8353	1.2649	0.5942
22	9.5061	0.8127	1.0149	1.2316	9	9.6448	0.8332	1.2663	0.5537
23	9.5086	0.8127	1.0264	1.2264	10	9.6482	0.8319	1.2676	0.5088
24	9.5117	0.8117	1.0375	1.2210	11	9.6519	0.8317	1.2688	0.4586
25	+9.5155	-0.8100	-1.0482	+1.2154	12	+9.6555	-0.8325	-1.2699	+0.4018
26	9.5204	0.8081	1.0585	1.2096	13	9.6586	0.8344	1.2708	0.3364
27	9.5262	0.8068	1.0684	1.2036	14	9.6611	0.8367	1.2715	0.2592
28	9.5327	0.8062	1.0779	1.1973	15	9.6628	0.8390	1.2721	0.1650
29	9.5392	0.8069	1.0871	1.1908	16	9.6638	0.8408	1.2725	0.0446
30	+9.5454	-0.8088	-1.0959	+1.1841	17	+9.6644	-0.8417	-1.2728	+0.8770
31	9.5509	0.8117	1.1044	1.1772	18	9.6648	0.8414	1.2730	0.6010
Feb. 1	9.5552	0.8152	1.1126	1.1700	19	9.6655	0.8400	1.2731	+8.6530
2	9.5584	0.8188	1.1205	1.1625	20	9.6667	0.8376	1.2731	-9.4895
3	9.5605	0.8218	1.1281	1.1547	(12.0) 21	9.6685	0.8346	1.2729	9.8207
h (9.0) 4	+9.5619	-0.8239	-1.1353	+1.1467	22	+9.6712	-0.8317	-1.2726	-0.0065
5	9.5629	0.8248	1.1423	1.1384	23	9.6745	0.8292	1.2721	0.1361
6	9.5640	0.8246	1.1491	1.1298	24	9.6782	0.8277	1.2715	0.2356
7	9.5657	0.8234	1.1557	1.1209	25	9.6820	0.8272	1.2708	0.3164
8	9.5682	0.8217	1.1621	1.1117	26	9.6854	0.8279	1.2700	0.3844
9	+9.5717	-0.8200	-1.1684	+1.1021	27	+9.6883	-0.8294	-1.2691	-0.4430
10	9.5760	0.8189	1.1744	1.0922	28	9.6904	0.8312	1.2680	0.4944
11	9.5808	0.8187	1.1802	1.0819	29	9.6917	0.8329	1.2668	0.5402
12	9.5858	0.8197	1.1857	1.0712	30	9.6923	0.8339	1.2654	0.5815
13	9.5905	0.8219	1.1909	1.0601	31	9.6925	0.8338	1.2639	0.6192
14	+9.5946	-0.8248	-1.1958	+1.0486	Apr. 1	+9.6925	-0.8326	-1.2623	-0.6537
15	+9.5977	-0.8282	-1.2006	+1.0365	2	+9.6929	-0.8302	-1.2605	-0.6855

 $\Sigma = + 0^{\circ}.03.$

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.	Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.
Apr. 1	+9.6925	-0.8326	-1.2623	-0.6537	May 17	+9.7887	-0.7503	-1.0033	-1.2365
2	9.6929	0.8302	1.2605	0.6855	18	9.7925	0.7478	0.9916	1.2411
3	9.6938	0.8269	1.2586	0.7150	19	9.7962	0.7467	0.9796	1.2455
h	9.6953	0.8233	1.2566	0.7424	h	9.7995	0.7470	0.9672	1.2497
(13.0) 5	9.6976	0.8198	1.2545	0.7681	(16.0) 21	9.8024	0.7481	0.9544	1.2537
6	+9.7005	-0.8170	-1.2523	-0.7922	22	+9.8047	-0.7495	-0.9409	-1.2576
7	9.7038	0.8152	1.2499	0.8150	23	9.8063	0.7506	0.9267	1.2614
8	9.7072	0.8147	1.2473	0.8364	24	9.8076	0.7508	0.9118	1.2650
9	9.7102	0.8151	1.2445	0.8569	25	9.8085	0.7497	0.8962	1.2685
10	9.7127	0.8163	1.2416	0.8761	26	9.8095	0.7472	0.8800	1.2718
11	+9.7147	-0.8177	-1.2386	-0.8944	27	+9.8108	-0.7434	-0.8632	-1.2749
12	9.7159	0.8188	1.2354	0.9118	28	9.8125	0.7389	0.8456	1.2779
13	9.7168	0.8190	1.2321	0.9284	29	9.8148	0.7342	0.8272	1.2808
14	9.7174	0.8181	1.2286	0.9443	30	9.8176	0.7300	0.8078	1.2835
15	9.7182	0.8159	1.2250	0.9595	31	9.8208	0.7268	0.7874	1.2860
16	+9.7193	-0.8127	-1.2213	-0.9741	June 1	+9.8242	-0.7252	-0.7658	-1.2884
17	9.7211	0.8087	1.2174	0.9881	2	9.8275	0.7250	0.7430	1.2907
18	9.7235	0.8045	1.2133	1.0015	3	9.8305	0.7261	0.7188	1.2929
h	9.7266	0.8006	1.2090	1.0144	h	9.8330	0.7280	0.6930	1.2950
(14.0) 20	9.7302	0.7976	1.2046	1.0268	(17.0) 5	9.8351	0.7299	0.6655	1.2969
21	+9.7339	-0.7958	-1.2000	-1.0387	6	+9.8367	-0.7313	-0.6360	-1.2987
22	9.7374	0.7952	1.1952	1.0501	7	9.8381	0.7316	0.6042	1.3004
23	9.7405	0.7956	1.1903	1.0611	8	9.8394	0.7305	0.5698	1.3019
24	9.7430	0.7967	1.1852	1.0717	9	9.8408	0.7279	0.5323	1.3032
25	9.7448	0.7978	1.1799	1.0820	10	9.8426	0.7242	0.4912	1.3044
26	+9.7460	-0.7984	-1.1744	-1.0920	11	+9.8448	-0.7199	-0.4455	-1.3055
27	9.7467	0.7980	1.1687	1.1016	12	9.8476	0.7158	0.3944	1.3065
28	9.7472	0.7963	1.1628	1.1108	13	9.8509	0.7123	0.3364	1.3075
29	9.7478	0.7933	1.1567	1.1196	14	9.8543	0.7102	0.2693	1.3084
30	9.7489	0.7894	1.1504	1.1281	15	9.8578	0.7096	0.1897	1.3091
May 1	+9.7506	-0.7848	-1.1438	-1.1363	16	+9.8611	-0.7106	-0.0921	-1.3096
2	9.7529	0.7802	1.1370	1.1443	17	9.8640	0.7127	0.9658	1.3100
3	9.7558	0.7762	1.1300	1.1521	18	9.8663	0.7154	0.9780	1.3103
4	9.7591	0.7733	1.1229	1.1596	h	9.8681	0.7180	-0.4768	1.3105
h	9.7626	0.7717	1.1156	1.1669	(18.0) 20	9.8695	0.7197	+0.0899	1.3105
(15.0) 6	+9.7658	-0.7714	-1.1080	-1.1739	21	+9.8706	-0.7202	+0.5109	-1.3104
7	9.7687	0.7721	1.1001	1.1806	22	9.8715	0.7192	0.8037	1.3102
8	9.7711	0.7732	1.0919	1.1871	23	9.8727	0.7168	0.9769	1.3099
9	9.7729	0.7742	1.0834	1.1934	24	9.8742	0.7135	0.1003	1.3096
10	9.7742	0.7744	1.0745	1.1995	25	9.8761	0.7097	0.1962	1.3092
11	+9.7753	-0.7735	-1.0654	-1.2054	26	+9.8785	-0.7063	+0.2746	-1.3086
12	9.7764	0.7713	1.0559	1.2111	27	9.8813	0.7039	0.3409	1.3078
13	9.7778	0.7678	1.0461	1.2166	28	9.8843	0.7030	0.3982	1.3068
14	9.7797	0.7634	1.0360	1.2219	29	9.8873	0.7037	0.4488	1.3057
15	9.7821	0.7586	1.0255	1.2269	30	9.8901	0.7058	0.4940	1.3045
16	+9.7852	-0.7540	-1.0146	-1.2318	July 1	+9.8925	-0.7089	+0.5348	-1.3032
17	+9.7887	-0.7503	-1.0033	-1.2365	2	+9.8944	-0.7124	+0.5720	-1.3018

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.	Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.
July 1	+9.8925	-0.7089	+0.5348	-1.3032	Aug. 16	+9.9657	-0.7472	+1.1838	-1.0744
2	9.8944	0.7124	0.5720	1.3018	17	9.9662	0.7458	1.1889	1.0640
3	9.8959	0.7154	0.6062	1.3003	18	9.9670	0.7436	1.1939	1.0532
h 4	9.8971	0.7174	0.6377	1.2986	h 19	9.9682	0.7412	1.1987	1.0420
(19.0) 5	9.8982	0.7181	0.6670	1.2968	(22.0) 20	9.9697	0.7393	1.2033	1.0304
6	+9.8994	-0.7172	+0.6943	-1.2949	21	+9.9715	-0.7385	+1.2077	-1.0183
7	9.9008	0.7151	0.7199	1.2929	22	9.9733	0.7391	1.2120	1.0057
8	9.9026	0.7122	0.7440	1.2907	23	9.9752	0.7410	1.2161	0.9926
9	9.9048	0.7091	0.7667	1.2884	24	9.9768	0.7441	1.2201	0.9789
10	9.9074	0.7066	0.7881	1.2860	25	9.9780	0.7478	1.2239	0.9647
11	+9.9103	-0.7053	+0.8084	-1.2834	26	+9.9789	-0.7515	+1.2275	-0.9499
12	9.9133	0.7055	0.8277	1.2807	27	9.9795	0.7544	1.2309	0.9345
13	9.9161	0.7074	0.8461	1.2779	28	9.9798	0.7563	1.2342	0.9184
14	9.9187	0.7104	0.8636	1.2749	29	9.9801	0.7567	1.2373	0.9016
15	9.9208	0.7143	0.8803	1.2717	30	9.9805	0.7558	1.2403	0.8839
16	+9.9224	-0.7182	+0.8963	-1.2684	31	+9.9811	-0.7537	+1.2432	-0.8652
17	9.9235	0.7214	0.9116	1.2650	Sept. 1	9.9821	0.7510	1.2460	0.8455
18	9.9244	0.7236	0.9263	1.2614	2	9.9835	0.7484	1.2487	0.8247
19	9.9251	0.7241	0.9403	1.2577	h 3	9.9852	0.7464	1.2512	0.8029
20	9.9258	0.7233	0.9538	1.2539	(23.0) 4	9.9871	0.7456	1.2536	0.7797
h (20.0) 21	+9.9268	-0.7214	+0.9668	-1.2499	5	+9.9890	-0.7462	+1.2558	-0.7550
22	9.9282	0.7188	0.9793	1.2457	6	9.9908	0.7481	1.2578	0.7288
23	9.9300	0.7164	0.9913	1.2413	7	9.9923	0.7509	1.2596	0.7007
24	9.9321	0.7147	1.0030	1.2367	8	9.9933	0.7541	1.2613	0.6705
25	9.9345	0.7143	1.0143	1.2319	9	9.9940	0.7570	1.2629	0.6379
26	+9.9369	-0.7155	+1.0251	-1.2270	10	+9.9943	-0.7591	+1.2644	-0.6026
27	9.9392	0.7181	1.0355	1.2220	11	9.9944	0.7599	1.2659	0.5639
28	9.9412	0.7218	1.0455	1.2168	12	9.9944	0.7593	1.2673	0.5213
29	9.9428	0.7260	1.0551	1.2115	13	9.9946	0.7574	1.2686	0.4739
30	9.9440	0.7300	1.0644	1.2060	14	9.9950	0.7545	1.2697	0.4204
31	+9.9449	-0.7331	+1.0735	-1.2002	15	+9.9958	-0.7512	+1.2706	-0.3593
Aug. 1	9.9456	0.7349	1.0823	1.1942	16	9.9969	0.7482	1.2713	0.2879
2	9.9463	0.7353	1.0908	1.1879	17	9.9983	0.7459	1.2718	0.2022
3	9.9471	0.7343	1.0989	1.1814	18	9.9999	0.7449	1.2722	0.0954
h 4	9.9483	0.7324	1.1068	1.1747	h 19	0.0014	0.7453	1.2725	9.9528
(21.0) 5	+9.9498	-0.7300	+1.1145	-1.1678	(0.0) 20	+0.0028	-0.7469	+1.2728	-9.7385
6	9.9518	0.7280	1.1219	1.1607	21	0.0039	0.7493	1.2730	-9.2965
7	9.9540	0.7269	1.1291	1.1533	22	0.0047	0.7519	1.2731	+9.1767
8	9.9564	0.7271	1.1361	1.1457	23	0.0052	0.7540	1.2730	9.6990
9	9.9587	0.7289	1.1428	1.1378	24	0.0054	0.7550	1.2727	9.9294
10	+9.9608	-0.7319	+1.1493	-1.1296	25	+0.0056	-0.7547	+1.2723	+0.0791
11	9.9625	0.7358	1.1556	1.1212	26	0.0058	0.7530	1.2718	0.1902
12	9.9637	0.7399	1.1616	1.1125	27	0.0062	0.7500	1.2712	0.2784
13	9.9646	0.7435	1.1674	1.1035	28	0.0070	0.7461	1.2704	0.3518
14	9.9651	0.7462	1.1730	1.0942	29	0.0081	0.7421	1.2695	0.4144
15	+9.9654	-0.7474	+1.1785	-1.0845	30	+0.0096	-0.7385	+1.2685	+0.4690
16	+9.9657	-0.7472	+1.1838	-1.0744	Oct. 1	+0.0113	-0.7359	+1.2674	+0.5174

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.	Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.
Oct. 1	+0.0113	-0.7359	+1.2674	+0.5174	Nov. 16	+0.0600	-0.6553	+1.0300	+1.2247
2	0.0130	0.7347	1.2661	0.5608	17	0.0608	0.6558	1.0189	1.2299
3	0.0147	0.7349	1.2647	0.6003	h 18	0.0615	0.6550	1.0073	1.2349
h 4	0.0162	0.7362	1.2631	0.6363	(4.0) 19	0.0621	0.6525	0.9952	1.2398
(1.0) 5	0.0173	0.7381	1.2614	0.6695	20	0.0628	0.6482	0.9826	1.2445
6	+0.0181	-0.7399	+1.2596	+0.7002	21	+0.0637	-0.6426	+0.9694	+1.2490
7	0.0185	0.7411	1.2577	0.7288	22	0.0650	0.6363	0.9556	1.2533
8	0.0187	0.7411	1.2556	0.7555	23	0.0666	0.6300	0.9412	1.2574
9	0.0188	0.7396	1.2534	0.7805	24	0.0685	0.6246	0.9263	1.2614
10	0.0189	0.7367	1.2510	0.8041	25	0.0705	0.6209	0.9108	1.2652
11	+0.0193	-0.7325	+1.2484	+0.8264	26	+0.0726	-0.6191	+0.8947	+1.2688
12	0.0200	0.7277	1.2457	0.8474	27	0.0745	0.6191	0.8780	1.2723
13	0.0210	0.7230	1.2429	0.8674	28	0.0762	0.6205	0.8602	1.2756
14	0.0224	0.7189	1.2400	0.8864	29	0.0776	0.6225	0.8413	1.2787
15	0.0239	0.7160	1.2369	0.9044	30	0.0787	0.6242	0.8213	1.2817
16	+0.0255	-0.7146	+1.2336	+0.9216	Dec. 1	+0.0795	-0.6249	+0.8002	+1.2845
17	0.0270	0.7145	1.2301	0.9380	2	0.0802	0.6240	0.7780	1.2871
18	0.0283	0.7156	1.2264	0.9537	3	0.0808	0.6212	0.7545	1.2896
h 19	0.0293	0.7170	1.2226	0.9688	h 4	0.0815	0.6166	0.7295	1.2920
(2.0) 20	0.0300	0.7182	1.2187	0.9833	(5.0) 5	0.0825	0.6110	0.7029	1.2943
21	+0.0305	-0.7185	+1.2146	+0.9972	6	+0.0837	-0.6049	+0.6743	+1.2964
22	0.0308	0.7175	1.2104	1.0105	7	0.0852	0.5992	0.6436	1.2983
23	0.0311	0.7149	1.2060	1.0233	8	0.0870	0.5948	0.6103	1.3001
24	0.0316	0.7108	1.2014	1.0356	9	0.0889	0.5922	0.5742	1.3017
25	0.0324	0.7056	1.1966	1.0475	10	0.0908	0.5918	0.5346	1.3032
26	+0.0336	-0.7000	+1.1915	+1.0589	11	+0.0925	-0.5933	+0.4910	+1.3046
27	0.0351	0.6947	1.1862	1.0699	12	0.0940	0.5959	0.4422	1.3059
28	0.0368	0.6902	1.1807	1.0805	13	0.0952	0.5989	0.3872	1.3070
29	0.0387	0.6873	1.1750	1.0907	14	0.0962	0.6014	0.3239	1.3079
30	0.0406	0.6859	1.1691	1.1006	15	0.0970	0.6026	0.2495	1.3087
31	+0.0423	-0.6859	+1.1631	+1.1101	16	+0.0977	-0.6019	+0.1598	+1.3093
Nov. 1	0.0437	0.6869	1.1569	1.1193	17	0.0985	0.5993	0.0462	1.3098
2	0.0448	0.6882	1.1504	1.1281	18	0.0994	0.5950	0.8915	1.3102
h 3	0.0456	0.6889	1.1436	1.1366	h 19	0.1006	0.5898	0.6490	1.3105
(3.0) 4	0.0461	0.6885	1.1366	1.1449	(6.0) 20	0.1022	0.5844	+0.0806	1.3106
5	+0.0464	-0.6866	+1.1294	+1.1529	21	+0.1040	-0.5799	-0.3425	+1.3106
6	0.0468	0.6830	1.1219	1.1607	22	0.1059	0.5769	0.7435	1.3105
7	0.0474	0.6779	1.1141	1.1682	23	0.1079	0.5761	0.9483	1.3102
8	0.0482	0.6720	1.1060	1.1754	24	0.1099	0.5774	0.0865	1.3098
9	0.0494	0.6658	1.0976	1.1824	25	0.1117	0.5805	0.1913	1.3092
10	+0.0509	-0.6602	+1.0889	+1.1891	26	+0.1131	-0.5846	-0.2753	+1.3084
11	0.0526	0.6559	1.0800	1.1956	27	0.1143	0.5886	0.3457	1.3075
12	0.0544	0.6531	1.0708	1.2019	28	0.1152	0.5918	0.4062	1.3065
13	0.0561	0.6522	1.0612	1.2079	29	0.1159	0.5934	0.4591	1.3054
14	0.0577	0.6526	1.0512	1.2137	30	0.1165	0.5931	0.5061	1.3041
15	+0.0590	-0.6539	+1.0408	+1.2193	31	+0.1172	-0.5909	-0.5485	+1.3027
16	+0.0600	-0.6553	+1.0300	+1.2247	32	+0.1180	-0.5872	-0.5869	+1.3012

Σ = + 0°.04.

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	T	f		G		H		Log g.	Log h.	i	Log i.
		In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
Jan.	y	"	s	°	h m	°	h m			"	
0	0.0031	+11.10	+0.740	307 59	20 31.3	349 47	23 19.1	+0.8933	+1.3094	-1.57	-0.1956
1	0.0058	11.36	0.757	308 43	20 34.9	348 51	23 15.4	0.8967	1.3092	1.71	0.2332
2	0.0086	11.64	0.776	309 21	20 37.4	347 55	23 11.7	0.9009	1.3089	1.85	0.2676
3	0.0113	11.88	0.792	309 51	20 39.4	346 58	23 7.9	0.9057	1.3086	1.99	0.2992
4	0.0141	12.11	0.807	310 12	20 40.8	346 1	23 4.1	0.9105	1.3083	2.13	0.3288
h (7.0)	5	+12.29	+0.819	310 26	20 41.7	345 4	23 0.3	+0.9151	+1.3080	-2.27	-0.3563
6	0.0195	12.44	0.829	310 34	20 42.3	344 7	22 56.5	0.9190	1.3076	2.41	0.3821
7	0.0223	12.54	0.836	310 39	20 42.6	343 10	22 52.7	0.9219	1.3072	2.54	0.4063
8	0.0250	12.62	0.841	310 45	20 43.0	342 13	22 48.9	0.9239	1.3068	2.68	0.4290
9	0.0278	12.69	0.846	310 54	20 43.6	341 16	22 45.1	0.9249	1.3064	2.81	0.4505
10	0.0305	+12.78	+0.852	311 9	20 44.6	340 19	22 41.3	+0.9256	+1.3060	-2.95	-0.4708
11	0.0332	12.89	0.859	311 32	20 46.1	339 22	22 37.5	0.9263	1.3056	3.08	0.4901
12	0.0359	13.04	0.869	312 1	20 48.1	338 24	22 33.6	0.9273	1.3052	3.22	0.5085
13	0.0387	13.23	0.882	312 33	20 50.2	337 27	22 29.8	0.9290	1.3047	3.35	0.5260
14	0.0414	13.45	0.897	313 6	20 52.4	336 29	22 25.9	0.9317	1.3042	3.49	0.5427
15	0.0441	+13.68	+0.912	313 36	20 54.4	335 31	22 22.1	+0.9353	+1.3037	-3.62	-0.5587
16	0.0468	13.92	0.928	314 1	20 56.1	334 33	22 18.2	0.9396	1.3032	3.75	0.5740
17	0.0496	14.15	0.943	314 18	20 57.2	333 35	22 14.3	0.9442	1.3027	3.88	0.5886
18	0.0523	14.35	0.957	314 30	20 58.0	332 37	22 10.5	0.9489	1.3022	4.01	0.6025
h (8.0)	19	0.0551	14.51	0.967	314 35	20 58.3	331 39	0.9531	1.3016	4.13	0.6158
20	0.0578	+14.63	+0.975	314 37	20 58.5	330 40	22 2.7	+0.9566	+1.3010	-4.25	-0.6286
21	0.0605	14.73	0.982	314 39	20 58.6	329 42	21 58.8	0.9592	1.3004	4.37	0.6409
22	0.0633	14.81	0.987	314 43	20 58.9	328 43	21 54.9	0.9611	1.2998	4.49	0.6527
23	0.0660	14.90	0.993	314 52	20 59.5	327 44	21 50.9	0.9623	1.2992	4.61	0.6641
24	0.0688	15.00	1.000	315 9	21 0.6	326 45	21 47.0	0.9633	1.2986	4.73	0.6751
25	0.0715	+15.13	+1.009	315 30	21 2.0	325 46	21 43.1	+0.9644	+1.2980	-4.85	-0.6857
26	0.0742	15.31	1.021	315 57	21 3.8	324 46	21 39.1	0.9660	1.2974	4.97	0.6960
27	0.0770	15.51	1.034	316 25	21 5.7	323 47	21 35.1	0.9684	1.2968	5.08	0.7059
28	0.0797	15.74	1.049	316 54	21 7.6	322 47	21 31.1	0.9715	1.2962	5.19	0.7154
29	0.0825	15.98	1.065	317 16	21 9.1	321 47	21 27.1	0.9754	1.2955	5.30	0.7245
30	0.0852	+16.21	+1.081	317 33	21 10.2	320 47	21 23.1	+0.9796	+1.2948	-5.41	-0.7333
31	0.0879	16.42	1.095	317 44	21 10.9	319 47	21 19.1	0.9839	1.2941	5.52	0.7418
Feb.	1	0.0907	16.58	1.105	317 47	21 11.1	318 46	0.9878	1.2935	5.62	0.7500
2	0.0934	16.70	1.113	317 45	21 11.0	317 46	21 11.1	0.9912	1.2928	5.72	0.7579
h (9.0)	3	0.0962	16.78	1.119	317 42	21 10.8	316 46	0.9937	1.2922	5.82	0.7655
4	0.0989	+16.84	+1.123	317 39	21 10.6	315 45	21 3.0	+0.9954	+1.2915	-5.92	-0.7727
5	0.1016	16.88	1.125	317 39	21 10.6	314 44	20 58.9	0.9964	1.2908	6.02	0.7797
6	0.1044	16.90	1.127	317 44	21 10.9	313 43	20 54.9	0.9970	1.2902	6.12	0.7865
7	0.1071	16.98	1.132	317 56	21 11.7	312 42	20 50.8	0.9973	1.2895	6.21	0.7937
8	0.1099	17.08	1.139	318 12	21 12.8	311 41	20 46.7	0.9980	1.2889	6.30	0.7995
9	0.1126	+17.22	+1.148	318 33	21 14.2	310 39	20 42.6	+0.9991	+1.2882	-6.39	-0.8058
10	0.1153	17.39	1.159	318 54	21 15.6	309 37	20 38.5	1.0011	1.2876	6.48	0.8118
11	0.1181	17.59	1.173	319 14	21 16.9	308 35	20 34.3	1.0038	1.2869	6.57	0.8175
12	0.1208	17.79	1.186	319 29	21 17.9	307 33	20 30.2	1.0071	1.2863	6.65	0.8230
13	0.1236	17.98	1.199	319 39	21 18.6	306 31	20 26.1	1.0107	1.2856	6.73	0.8283
14	0.1263	+18.15	+1.210	319 44	21 18.9	305 28	20 21.9	+1.0142	+1.2850	-6.81	-0.8333
15	0.1290	+18.28	+1.219	319 43	21 18.9	304 26	20 17.7	+1.0175	+1.2844	-6.89	-0.8382

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	f		G		H		Log g .	Log h .	i	Log i .
		In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
	y	"	s	"	h m	"	h m			"	
Feb. 15	0.1290	+18.28	+1.219	319 43	21 18.9	304 26	20 17.7	+1.0175	+1.2844	-6.89	-0.8382
16	0.1318	18.38	1.225	319 39	21 18.6	303 23	20 13.5	1.0201	1.2838	6.97	0.8429
17	0.1345	18.44	1.229	319 35	21 18.3	302 20	20 9.3	1.0221	1.2832	7.04	0.8474
h 18	0.1373	18.49	1.233	319 34	21 18.4	301 17	20 5.1	1.0233	1.2826	7.11	0.8517
(10.0) 19	0.1400	18.53	1.235	319 36	21 18.5	300 14	20 0.9	1.0241	1.2820	7.18	0.8559
20	0.1427	+18.59	+1.239	319 44	21 18.9	299 11	19 56.7	+1.0246	+1.2814	-7.25	-0.8599
21	0.1454	18.67	1.245	319 59	21 19.9	298 8	19 52.5	1.0250	1.2808	7.31	0.8637
22	0.1482	18.79	1.253	320 17	21 21.1	297 4	19 48.3	1.0259	1.2803	7.37	0.8674
23	0.1509	18.95	1.263	320 39	21 22.6	296 0	19 44.0	1.0273	1.2798	7.43	0.8709
24	0.1537	19.14	1.276	320 59	21 23.9	294 56	19 39.7	1.0294	1.2793	7.49	0.8743
25	0.1564	+19.34	+1.289	321 18	21 25.2	293 52	19 35.5	+1.0321	+1.2788	-7.54	-0.8775
26	0.1591	19.54	1.303	321 30	21 26.0	292 48	19 31.2	1.0353	1.2783	7.59	0.8805
27	0.1619	19.72	1.315	321 38	21 26.5	291 44	19 26.9	1.0385	1.2779	7.64	0.8834
28	0.1646	19.87	1.325	321 40	21 26.7	290 40	19 22.7	1.0415	1.2775	7.69	0.8861
Mar. 1	0.1673	19.97	1.331	321 37	21 26.5	289 36	19 18.4	1.0440	1.2771	7.73	0.8887
2	0.1700	+20.03	+1.335	321 32	21 26.1	288 32	19 14.1	+1.0458	+1.2767	-7.77	-0.8911
3	0.1728	20.05	1.337	321 27	21 25.8	287 28	19 9.8	1.0468	1.2763	7.81	0.8933
4	0.1755	20.06	1.337	321 25	21 25.7	286 23	19 5.5	1.0472	1.2759	7.85	0.8954
h 5	0.1783	20.07	1.338	321 28	21 25.9	285 18	19 1.2	1.0471	1.2755	7.89	0.8974
(11.0) 6	0.1810	20.08	1.339	321 36	21 26.4	284 13	18 56.9	1.0468	1.2752	7.93	0.8993
7	0.1837	+20.14	+1.343	321 49	21 27.3	283 9	18 52.6	+1.0467	+1.2749	-7.96	-0.9010
8	0.1865	20.24	1.349	322 7	21 28.5	282 4	18 48.3	1.0470	1.2746	7.99	0.9025
9	0.1892	20.37	1.358	322 25	21 29.7	280 59	18 43.9	1.0480	1.2743	8.02	0.9039
10	0.1920	20.53	1.369	322 43	21 30.9	279 54	18 39.6	1.0497	1.2741	8.04	0.9051
11	0.1947	20.70	1.380	322 58	21 31.9	278 49	18 35.3	1.0519	1.2739	8.06	0.9062
12	0.1974	+20.87	+1.391	323 9	21 32.6	277 44	18 30.9	+1.0545	+1.2737	-8.08	-0.9072
13	0.2002	21.03	1.402	323 13	21 32.9	276 39	18 26.6	1.0572	1.2736	8.10	0.9081
14	0.2029	21.15	1.410	323 14	21 32.9	275 34	18 22.3	1.0596	1.2735	8.11	0.9088
15	0.2057	21.23	1.415	323 12	21 32.8	274 29	18 17.9	1.0615	1.2734	8.12	0.9094
16	0.2084	21.28	1.419	323 9	21 32.6	273 24	18 13.6	1.0628	1.2733	8.13	0.9099
17	0.2111	+21.31	+1.421	323 8	21 32.5	272 19	18 9.3	+1.0635	+1.2732	-8.13	-0.9102
18	0.2139	21.33	1.422	323 10	21 32.7	271 14	18 4.9	1.0637	1.2731	8.13	0.9104
19	0.2166	21.36	1.424	323 18	21 33.2	270 9	18 0.6	1.0636	1.2731	8.13	0.9105
h 20	0.2194	21.43	1.429	323 32	21 34.1	269 4	17 56.3	1.0635	1.2732	8.13	0.9105
(12.0) 21	0.2221	21.52	1.435	323 50	21 35.3	267 59	17 51.9	1.0637	1.2732	8.13	0.9103
22	0.2248	+21.65	+1.443	324 11	21 36.7	266 54	17 47.6	+1.0644	+1.2733	-8.12	-0.9100
23	0.2276	21.81	1.454	324 33	21 38.2	265 49	17 43.3	1.0657	1.2734	8.11	0.9096
24	0.2303	22.00	1.467	324 52	21 39.5	264 44	17 38.9	1.0677	1.2735	8.10	0.9091
25	0.2331	22.19	1.479	325 8	21 40.5	263 39	17 34.6	1.0701	1.2736	8.09	0.9084
26	0.2358	22.37	1.491	325 18	21 41.2	262 35	17 30.3	1.0727	1.2737	8.08	0.9076
27	0.2385	+22.51	+1.501	325 23	21 41.5	261 31	17 26.1	+1.0751	+1.2739	-8.06	-0.9066
28	0.2413	22.62	1.508	325 25	21 41.7	260 27	17 21.8	1.0770	1.2741	8.04	0.9055
29	0.2440	22.70	1.513	325 23	21 41.5	259 23	17 17.5	1.0785	1.2743	8.02	0.9043
30	0.2468	22.72	1.515	325 22	21 41.4	258 19	17 13.3	1.0792	1.2745	8.00	0.9030
31	0.2495	22.74	1.516	325 23	21 41.5	257 15	17 9.0	1.0793	1.2748	7.97	0.9015
Apr. 1	0.2522	+22.74	+1.516	325 27	21 41.8	256 11	17 4.7	+1.0790	+1.2751	-7.94	-0.8999
2	0.2550	+22.76	+1.517	325 38	21 42.5	255 7	17 0.5	+1.0784	+1.2754	-7.91	-0.8982

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)		τ	f		G		H		Log g .	Log h .	i	Log i .	
			In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.					
		y	"	s	°	'	h	m	°	'	h	m	
Apr.	1	0.2522	+22.74	+1.516	325 27	21 41.8	256 11	17 4.7	+1.0790	+1.2751	-7.94	-0.8999	
	2	0.2550	22.76	1.517	325 38	21 42.5	255 7	17 0.5	1.0784	1.2754	7.91	0.8982	
	3	0.2577	22.81	1.521	325 53	21 43.5	254 3	16 56.2	1.0780	1.2757	7.88	0.8963	
	h	4	0.2605	22.88	1.525	326 12	21 44.8	252 59	16 51.9	1.0779	1.2760	7.84	0.8943
	(13.0)	5	0.2632	23.00	1.533	326 33	21 46.2	251 56	16 47.7	1.0784	1.2764	7.80	0.8921
	6	0.2659	+23.17	+1.545	326 54	21 47.6	250 53	16 43.5	+1.0796	+1.2768	-7.76	-0.8898	
	7	0.2687	23.34	1.556	327 12	21 48.8	249 50	16 39.3	1.0814	1.2772	7.72	0.8874	
	8	0.2714	23.52	1.568	327 26	21 49.7	248 47	16 35.1	1.0837	1.2776	7.67	0.8848	
	9	0.2742	23.68	1.579	327 35	21 50.3	247 44	16 30.9	1.0860	1.2781	7.62	0.8820	
	10	0.2769	23.82	1.588	327 40	21 50.7	246 42	16 26.8	1.0881	1.2786	7.57	0.8790	
	11	0.2796	+23.93	+1.595	327 42	21 50.8	245 40	16 22.7	+1.0899	+1.2791	-7.52	-0.8760	
	12	0.2824	23.99	1.599	327 43	21 50.9	244 38	16 18.5	1.0911	1.2796	7.46	0.8729	
	13	0.2851	24.04	1.603	327 45	21 51.0	243 36	16 14.4	1.0918	1.2801	7.40	0.8696	
	14	0.2879	24.07	1.605	327 50	21 51.3	242 34	16 10.3	1.0920	1.2806	7.34	0.8661	
	15	0.2906	24.12	1.608	328 1	21 52.1	241 32	16 6.1	1.0919	1.2811	7.28	0.8626	
h	16	0.2933	+24.17	+1.611	328 16	21 53.1	240 30	16 2.0	+1.0918	+1.2816	-7.22	-0.8589	
	17	0.2960	24.28	1.619	328 37	21 54.5	239 29	15 57.9	1.0920	1.2822	7.16	0.8550	
	18	0.2988	24.42	1.628	329 0	21 56.0	238 28	15 53.9	1.0926	1.2827	7.09	0.8509	
	h	19	0.3015	24.59	1.639	329 24	21 57.6	15 49.8	1.0939	1.2833	7.02	0.8466	
	(14.0)	20	0.3042	24.79	1.653	329 47	21 59.1	15 45.8	1.0958	1.2839	6.95	0.8422	
	21	0.3069	+25.01	+1.667	330 6	22 0.4	235 26	15 41.7	+1.0981	+1.2845	-6.88	-0.8376	
	22	0.3097	25.21	1.681	330 20	22 1.3	234 26	15 37.7	1.1006	1.2851	6.81	0.8328	
	23	0.3124	25.39	1.693	330 29	22 1.9	233 25	15 33.7	1.1031	1.2857	6.73	0.8279	
	24	0.3152	25.54	1.703	330 34	22 2.3	232 25	15 29.7	1.1052	1.2863	6.65	0.8228	
	25	0.3179	25.64	1.709	330 36	22 2.4	231 25	15 25.7	1.1069	1.2869	6.57	0.8175	
	26	0.3206	+25.71	+1.714	330 38	22 2.5	230 26	15 21.7	+1.1079	+1.2875	-6.49	-0.8120	
	27	0.3234	25.75	1.717	330 42	22 2.8	229 26	15 17.7	1.1084	1.2881	6.40	0.8063	
	28	0.3261	25.78	1.719	330 50	22 3.3	228 27	15 13.8	1.1083	1.2887	6.31	0.8004	
	29	0.3289	25.81	1.721	331 2	22 4.1	227 28	15 9.9	1.1081	1.2893	6.22	0.7943	
	30	0.3316	25.88	1.725	331 18	22 5.2	226 29	15 5.9	1.1080	1.2900	6.13	0.7880	
May	1	0.3343	+25.98	+1.732	331 39	22 6.6	225 30	15 2.0	+1.1083	+1.2906	-6.04	-0.7815	
	2	0.3371	26.12	1.741	332 2	22 8.1	224 32	14 58.1	1.1090	1.2913	5.95	0.7747	
	3	0.3398	26.29	1.753	332 24	22 9.6	223 34	14 54.3	1.1105	1.2919	5.86	0.7677	
	4	0.3426	26.51	1.767	332 44	22 10.9	222 36	14 50.4	1.1124	1.2926	5.76	0.7605	
	h	5	0.3453	26.71	1.781	333 1	22 12.1	14 46.5	1.1149	1.2932	5.66	0.7531	
	(15.0)	6	0.3480	+26.90	+1.793	333 12	22 12.8	14 42.7	+1.1174	+1.2938	-5.56	-0.7455	
	7	0.3508	27.09	1.806	333 19	22 13.3	219 43	14 38.9	1.1198	1.2945	5.46	0.7376	
	8	0.3535	27.23	1.815	333 23	22 13.5	218 46	14 35.1	1.1220	1.2951	5.36	0.7293	
	9	0.3563	27.35	1.823	333 26	22 13.7	217 49	14 31.3	1.1236	1.2957	5.26	0.7207	
	10	0.3590	27.44	1.829	333 29	22 13.9	216 52	14 27.5	1.1247	1.2963	5.15	0.7118	
	11	0.3617	+27.48	+1.832	333 36	22 14.4	215 55	14 23.7	+1.1253	+1.2969	-5.04	-0.7026	
	12	0.3645	27.57	1.838	333 46	22 15.1	214 58	14 19.9	1.1258	1.2975	4.93	0.6931	
	13	0.3672	27.67	1.845	334 1	22 16.0	214 2	14 16.1	1.1263	1.2981	4.82	0.6833	
	14	0.3700	27.78	1.852	334 21	22 17.4	213 6	14 12.4	1.1270	1.2987	4.71	0.6733	
	15	0.3727	27.93	1.862	334 43	22 18.9	212 10	14 8.7	1.1280	1.2993	4.60	0.6630	
16	0.3754	+28.14	+1.876	335 6	22 20.4	211 14	14 4.9	+1.1298	+1.2999	-4.49	-0.6524		
17	0.3782	+28.36	+1.891	335 28	22 21.9	210 18	14 1.2	+1.1320	+1.3005	-4.38	-0.6412		

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)		τ	f		G		H		Log g .	Log h .	i	Log i .
			In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
July		y	"	s	"	h m	"	h m			"	
	1	0.5014	+36.02	+2.401	341 54	22 47.6	170 20	11 21.3	+1.2168	+1.3094	+1.49	+0.1720
	2	0.5041	36.18	2.412	341 51	22 47.4	169 27	11 17.8	1.2188	1.3092	1.62	0.2093
	3	0.5069	36.30	2.420	341 47	22 47.1	168 34	11 14.3	1.2204	1.3090	1.75	0.2435
	h 4	0.5096	36.41	2.427	341 45	22 47.0	167 41	11 10.7	1.2217	1.3087	1.88	0.2750
	(19.0) 5	0.5123	36.50	2.433	341 46	22 47.1	166 48	11 7.2	1.2228	1.3084	2.02	0.3044
	6	0.5151	+36.60	+2.440	341 51	22 47.4	165 55	11 3.7	+1.2238	+1.3081	+2.15	+0.3317
	7	0.5178	36.71	2.447	341 59	22 47.9	165 2	11 0.1	1.2248	1.3078	2.28	0.3573
	8	0.5206	36.87	2.458	342 10	22 48.7	164 9	10 56.6	1.2262	1.3075	2.41	0.3814
	9	0.5233	37.05	2.470	342 22	22 49.5	163 16	10 53.1	1.2279	1.3072	2.54	0.4041
	10	0.5260	37.28	2.485	342 34	22 50.3	162 23	10 49.5	1.2300	1.3069	2.67	0.4255
	11	0.5288	+37.53	+2.502	342 43	22 50.9	161 29	10 45.9	+1.2326	+1.3065	+2.79	+0.4459
	12	0.5315	37.79	2.519	342 50	22 51.3	160 36	10 42.4	1.2353	1.3061	2.92	0.4652
	13	0.5343	38.03	2.535	342 52	22 51.5	159 42	10 38.8	1.2380	1.3057	3.04	0.4835
	14	0.5370	38.26	2.551	342 51	22 51.4	158 48	10 35.2	1.2406	1.3053	3.17	0.5011
	15	0.5397	38.45	2.563	342 47	22 51.1	157 54	10 31.6	1.2429	1.3049	3.29	0.5180
	16	0.5425	+38.59	+2.573	342 42	22 50.8	157 0	10 28.0	+1.2447	+1.3045	+3.42	+0.5341
	17	0.5452	38.69	2.579	342 37	22 50.5	156 6	10 24.4	1.2460	1.3040	3.54	0.5494
	18	0.5480	38.77	2.585	342 34	22 50.3	155 12	10 20.8	1.2470	1.3035	3.66	0.5639
	19	0.5507	38.83	2.589	342 34	22 50.3	154 17	10 17.1	1.2477	1.3030	3.78	0.5777
	h 20	0.5534	38.90	2.593	342 38	22 50.5	153 23	10 13.5	1.2483	1.3025	3.90	0.5910
	(20.0) 21	0.5561	+38.98	+2.599	342 44	22 50.9	152 28	10 9.9	+1.2490	+1.3020	+4.02	+0.6039
	22	0.5589	39.10	2.607	342 53	22 51.5	151 33	10 6.2	1.2501	1.3015	4.14	0.6164
	23	0.5616	39.26	2.617	343 3	22 52.1	150 38	10 2.5	1.2515	1.3010	4.26	0.6286
	24	0.5643	39.46	2.631	343 12	22 52.8	149 43	9 58.9	1.2532	1.3004	4.37	0.6404
	25	0.5670	39.68	2.645	343 17	22 53.1	148 48	9 55.2	1.2554	1.2998	4.49	0.6517
	26	0.5698	+39.90	+2.660	343 20	22 53.3	147 52	9 51.5	+1.2577	+1.2993	+4.60	+0.6626
	27	0.5725	40.11	2.674	343 19	22 53.3	146 56	9 47.7	1.2601	1.2987	4.71	0.6731
	28	0.5753	40.29	2.686	343 15	22 53.0	146 2	9 44.1	1.2622	1.2982	4.82	0.6831
	29	0.5780	40.44	2.696	343 10	22 52.7	145 6	9 40.4	1.2640	1.2976	4.93	0.6927
	30	0.5807	40.56	2.704	343 3	22 52.2	144 10	9 36.7	1.2655	1.2970	5.03	0.7020
Aug.	31	0.5835	+40.64	+2.709	342 58	22 51.9	143 14	9 32.9	+1.2666	+1.2964	+5.14	+0.7110
	1	0.5862	40.70	2.713	342 56	22 51.7	142 17	9 29.1	1.2674	1.2958	5.24	0.7197
	2	0.5890	40.77	2.718	342 57	22 51.8	141 21	9 25.4	1.2680	1.2952	5.35	0.7282
	3	0.5917	40.84	2.723	343 1	22 52.1	140 24	9 21.6	1.2687	1.2946	5.45	0.7364
	h 4	0.5944	40.96	2.731	343 8	22 52.5	139 27	9 17.8	1.2696	1.2940	5.55	0.7444
	(21.0) 5	0.5972	+41.10	+2.741	343 16	22 53.1	138 30	9 14.0	+1.2708	+1.2934	+5.65	+0.7521
	6	0.5999	41.29	2.753	343 25	22 53.7	137 33	9 10.2	1.2725	1.2928	5.75	0.7595
	7	0.6027	41.50	2.767	343 32	22 54.2	136 36	9 6.4	1.2744	1.2922	5.85	0.7667
	8	0.6054	41.73	2.782	343 37	22 54.5	135 39	9 2.6	1.2766	1.2915	5.94	0.7736
	9	0.6081	41.95	2.797	343 38	22 54.5	134 41	8 58.7	1.2789	1.2909	6.03	0.7803
	10	0.6109	+42.15	+2.810	343 38	22 54.5	133 43	8 54.9	+1.2810	+1.2903	+6.12	+0.7868
	11	0.6136	42.32	2.821	343 31	22 54.1	132 45	8 51.0	1.2829	1.2896	6.21	0.7931
	12	0.6164	42.43	2.829	343 25	22 53.7	131 47	8 47.1	1.2844	1.2890	6.30	0.7992
	13	0.6191	42.52	2.835	343 19	22 53.3	130 48	8 43.2	1.2855	1.2884	6.38	0.8050
	14	0.6218	42.57	2.838	343 14	22 52.9	129 49	8 39.3	1.2862	1.2878	6.46	0.8106
	15	0.6246	+42.60	+2.840	343 12	22 52.8	128 50	8 35.3	+1.2865	+1.2871	+6.54	+0.8161
	16	0.6273	+42.63	+2.842	343 13	22 52.9	127 51	8 31.4	+1.2868	+1.2865	+6.62	+0.8214

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	f		G		H		Log g .	Log h .	i	Log i .
		In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
	y	"	s	"	h m	"	h m			"	
Aug. 16	0.6273	+42.63	+2.842	343 13	22 52.9	127 51	8 31.4	+1.2868	+1.2865	+6.62	+0.8214
17	0.6301	42.68	2.845	343 17	22 53.1	126 51	8 27.4	1.2872	1.2859	6.70	0.8265
18	0.6328	42.76	2.851	343 24	22 53.6	125 52	8 23.5	1.2877	1.2853	6.78	0.8314
h 19	0.6355	42.87	2.858	343 32	22 54.1	124 52	8 19.5	1.2886	1.2847	6.86	0.8361
(22.0) 20	0.6383	43.02	2.868	343 39	22 54.6	123 52	8 15.4	1.2898	1.2841	6.93	0.8406
21	0.6410	+43.20	+2.880	343 44	22 54.9	122 52	8 11.4	+1.2914	+1.2835	+7.00	+0.8450
22	0.6438	43.38	2.892	343 47	22 55.1	121 52	8 7.4	1.2931	1.2829	7.07	0.8493
23	0.6465	43.57	2.905	343 47	22 55.1	120 52	8 3.4	1.2950	1.2824	7.14	0.8535
24	0.6492	43.73	2.915	343 44	22 54.9	119 51	7 59.4	1.2968	1.2818	7.20	0.8575
25	0.6520	43.85	2.923	343 39	22 54.6	118 50	7 55.3	1.2981	1.2813	7.26	0.8613
26	0.6547	+43.94	+2.929	343 33	22 54.2	117 49	7 51.3	+1.2992	+1.2807	+7.32	+0.8649
27	0.6575	44.00	2.933	343 28	22 53.9	116 48	7 47.2	1.3000	1.2802	7.38	0.8683
28	0.6602	44.03	2.935	343 24	22 53.6	115 47	7 43.1	1.3005	1.2797	7.44	0.8716
29	0.6629	44.07	2.938	343 24	22 53.6	114 46	7 39.1	1.3008	1.2792	7.49	0.8748
30	0.6657	44.11	2.941	343 27	22 53.8	113 45	7 35.0	1.3011	1.2787	7.54	0.8778
31	0.6684	+44.17	+2.945	343 33	22 54.2	112 43	7 30.9	+1.3015	+1.2782	+7.59	+0.8807
Sept. 1	0.6712	44.27	2.951	343 41	22 54.7	111 41	7 26.7	1.3022	1.2778	7.64	0.8835
2	0.6739	44.41	2.961	343 49	22 55.3	110 39	7 22.6	1.3033	1.2774	7.69	0.8862
h 3	0.6766	44.59	2.973	343 56	22 55.8	109 37	7 18.5	1.3047	1.2770	7.73	0.8887
(23.0) 4	0.6794	44.78	2.985	344 3	22 56.2	108 35	7 14.3	1.3064	1.2766	7.77	0.8910
5	0.6821	+44.97	+2.998	344 5	22 56.3	107 32	7 10.1	+1.3082	+1.2762	+7.81	+0.8932
6	0.6849	45.16	3.011	344 5	22 56.3	106 29	7 5.9	1.3100	1.2759	7.85	0.8953
7	0.6876	45.32	3.021	344 2	22 56.2	105 26	7 1.7	1.3116	1.2756	7.89	0.8972
8	0.6903	45.42	3.028	343 58	22 55.9	104 23	6 57.5	1.3127	1.2753	7.92	0.8990
9	0.6930	45.50	3.033	343 53	22 55.5	103 20	6 53.3	1.3136	1.2750	7.95	0.9006
10	0.6958	+45.53	+3.035	343 49	22 55.3	102 17	6 49.1	+1.3141	+1.2747	+7.98	+0.9021
11	0.6985	45.54	3.036	343 48	22 55.2	101 14	6 44.9	1.3142	1.2744	8.01	0.9035
12	0.7012	45.54	3.036	343 49	22 55.3	100 10	6 40.7	1.3142	1.2742	8.03	0.9048
13	0.7039	45.56	3.037	343 53	22 55.5	99 7	6 36.5	1.3142	1.2740	8.05	0.9060
14	0.7067	45.60	3.040	344 0	22 56.0	98 4	6 32.3	1.3144	1.2738	8.07	0.9070
15	0.7094	+45.68	+3.045	344 9	22 56.6	97 0	6 28.0	+1.3148	+1.2736	+8.09	+0.9079
16	0.7122	45.80	3.053	344 17	22 57.1	95 56	6 23.7	1.3156	1.2735	8.10	0.9087
17	0.7149	45.95	3.063	344 25	22 57.7	94 52	6 19.5	1.3168	1.2734	8.11	0.9093
18	0.7176	46.12	3.075	344 30	22 58.0	93 48	6 15.2	1.3182	1.2733	8.12	0.9098
h 19	0.7204	46.28	3.085	344 33	22 58.2	92 44	6 10.9	1.3196	1.2732	8.12	0.9102
(0.0) 20	0.7231	+46.42	+3.095	344 32	22 58.1	91 40	6 6.7	+1.3210	+1.2732	+8.13	+0.9104
21	0.7259	46.54	3.103	344 30	22 58.0	90 36	6 2.4	1.3222	1.2731	8.13	0.9105
22	0.7286	46.63	3.109	344 26	22 57.7	89 32	5 58.1	1.3231	1.2731	8.13	0.9105
23	0.7313	46.69	3.113	344 23	22 57.5	88 28	5 53.9	1.3237	1.2732	8.13	0.9104
24	0.7341	46.71	3.114	344 21	22 57.4	87 24	5 49.6	1.3240	1.2732	8.13	0.9102
25	0.7368	+46.73	+3.115	344 22	22 57.5	86 20	5 45.3	+1.3242	+1.2733	+8.12	+0.9099
26	0.7396	46.75	3.117	344 26	22 57.7	85 16	5 41.1	1.3242	1.2734	8.12	0.9094
27	0.7423	46.79	3.119	344 32	22 58.1	84 12	5 36.8	1.3244	1.2735	8.11	0.9087
28	0.7450	46.88	3.125	344 43	22 58.9	83 8	5 32.5	1.3248	1.2736	8.09	0.9079
29	0.7478	47.01	3.134	344 53	22 59.5	82 4	5 28.3	1.3256	1.2738	8.07	0.9070
30	0.7505	+47.16	+3.144	345 3	23 0.2	81 0	5 24.0	+1.3268	+1.2740	+8.05	+0.9060
Oct. 1	0.7533	+47.35	+3.157	345 11	23 0.7	79 56	5 19.7	+1.3282	+1.2742	+8.03	+0.9049

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	f		G		H		Log g .	Log A .	i	Log i .	
		In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.					
	y	"	s	°	'	°	'			"		
Oct.	1	0.7533	+47.35	+3.157	345 11	23 0.7	79 56	5 19.7	+1.3282	+1.2742	+8.03	+0.9049
	2	0.7560	47.53	3.169	345 17	23 1.1	78 52	5 15.5	1.3297	1.2744	8.01	0.9037
	3	0.7587	47.71	3.181	345 20	23 1.3	77 48	5 11.2	1.3313	1.2747	7.98	0.9023
h	4	0.7615	47.88	3.192	345 20	23 1.3	76 44	5 6.9	1.3328	1.2750	7.95	0.9008
(1.0)	5	0.7642	48.00	3.200	345 19	23 1.3	75 40	5 2.7	1.3339	1.2753	7.92	0.8991
	6	0.7670	+48.09	+3.206	345 17	23 1.1	74 36	4 58.4	+1.3348	+1.2756	+7.89	+0.8972
	7	0.7697	48.13	3.209	345 15	23 1.0	73 32	4 54.1	1.3353	1.2759	7.85	0.8951
	8	0.7724	48.15	3.210	345 15	23 1.0	72 28	4 49.9	1.3355	1.2763	7.81	0.8929
	9	0.7752	48.16	3.211	345 19	23 1.3	71 24	4 45.6	1.3354	1.2767	7.77	0.8906
	10	0.7779	48.18	3.212	345 24	23 1.6	70 20	4 41.3	1.3354	1.2771	7.73	0.8882
	11	0.7807	+48.22	+3.215	345 33	23 2.2	69 16	4 37.1	+1.3355	+1.2775	+7.69	+0.8857
	12	0.7834	48.30	3.220	345 44	23 2.9	68 13	4 32.9	1.3358	1.2779	7.64	0.8832
	13	0.7861	48.42	3.228	345 54	23 3.6	67 10	4 28.7	1.3365	1.2784	7.59	0.8805
	14	0.7889	48.57	3.238	346 5	23 4.3	66 7	4 24.5	1.3375	1.2789	7.54	0.8776
	15	0.7916	48.74	3.249	346 13	23 4.9	65 4	4 20.3	1.3388	1.2794	7.49	0.8745
	16	0.7944	+48.92	+3.261	346 18	23 5.2	64 1	4 16.1	+1.3402	+1.2799	+7.43	+0.8712
	17	0.7971	49.09	3.272	346 21	23 5.4	62 58	4 11.9	1.3416	1.2804	7.37	0.8676
	18	0.7998	49.23	3.282	346 22	23 5.5	61 55	4 7.7	1.3429	1.2809	7.31	0.8639
h	19	0.8026	49.35	3.290	346 21	23 5.4	60 53	4 3.5	1.3439	1.2814	7.25	0.8601
(2.0)	20	0.8053	49.43	3.295	346 20	23 5.3	59 51	3 59.4	1.3447	1.2820	7.19	0.8562
	21	0.8081	+49.48	+3.299	346 20	23 5.3	58 49	3 55.3	+1.3452	+1.2825	+7.12	+0.8521
	22	0.8108	49.52	3.301	346 23	23 5.5	57 47	3 51.1	1.3454	1.2831	7.05	0.8479
	23	0.8135	49.57	3.305	346 28	23 5.9	56 44	3 46.9	1.3455	1.2837	6.98	0.8435
	24	0.8162	49.61	3.307	346 36	23 6.4	55 42	3 42.8	1.3458	1.2843	6.90	0.8389
	25	0.8190	49.70	3.313	346 47	23 7.1	54 39	3 38.6	1.3463	1.2849	6.82	0.8340
	26	0.8217	+49.83	+3.322	346 59	23 7.9	53 37	3 34.5	+1.3471	+1.2855	+6.74	+0.8289
	27	0.8244	50.01	3.334	347 10	23 8.7	52 35	3 30.3	1.3483	1.2862	6.66	0.8237
	28	0.8271	50.20	3.347	347 21	23 9.4	51 33	3 26.2	1.3497	1.2868	6.58	0.8183
	29	0.8299	50.42	3.361	347 29	23 9.9	50 32	3 22.2	1.3514	1.2875	6.50	0.8127
	30	0.8326	50.64	3.376	347 34	23 10.3	49 31	3 18.1	1.3531	1.2881	6.41	0.8069
	31	0.8354	+50.85	+3.390	347 37	23 10.5	48 30	3 14.0	+1.3547	+1.2888	+6.32	+0.8008
Nov.	1	0.8381	51.01	3.401	347 38	23 10.5	47 29	3 9.9	1.3561	1.2894	6.23	0.7945
	2	0.8408	51.14	3.409	347 38	23 10.5	46 28	3 5.9	1.3572	1.2901	6.14	0.7880
h	3	0.8436	51.23	3.415	347 38	23 10.5	45 28	3 1.9	1.3580	1.2907	6.05	0.7812
(3.0)	4	0.8463	51.29	3.419	347 39	23 10.6	44 27	2 57.8	1.3585	1.2914	5.95	0.7742
	5	0.8491	+51.33	+3.422	347 43	23 10.9	43 27	2 53.8	+1.3587	+1.2921	+5.85	+0.7670
	6	0.8518	51.38	3.425	347 49	23 11.3	42 27	2 49.8	1.3589	1.2927	5.75	0.7595
	7	0.8545	51.44	3.429	347 59	23 11.9	41 27	2 45.8	1.3592	1.2934	5.65	0.7518
	8	0.8573	51.54	3.436	348 9	23 12.6	40 28	2 41.9	1.3598	1.2940	5.55	0.7438
	9	0.8600	51.68	3.445	348 21	23 13.4	39 28	2 37.9	1.3606	1.2947	5.44	0.7354
	10	0.8628	+51.86	+3.457	348 32	23 14.1	38 29	2 33.9	+1.3619	+1.2954	+5.33	+0.7267
	11	0.8655	52.06	3.471	348 41	23 14.7	37 29	2 29.9	1.3633	1.2960	5.22	0.7176
	12	0.8682	52.28	3.485	348 48	23 15.2	36 30	2 26.0	1.3649	1.2966	5.11	0.7081
	13	0.8710	52.48	3.499	348 51	23 15.4	35 31	2 22.1	1.3666	1.2973	5.00	0.6984
	14	0.8737	52.68	3.512	348 54	23 15.6	34 32	2 18.1	1.3681	1.2979	4.89	0.6884
	15	0.8765	+52.83	+3.522	348 54	23 15.6	33 33	2 14.2	+1.3694	+1.2985	+4.77	+0.6781
	16	0.8792	+52.95	+3.530	348 53	23 15.5	32 34	2 10.3	+1.3704	+1.2991	+4.65	+0.6675

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	r	f		G		H		Log g.	Log h.	i	Log i.
		In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
	y	"	"	"	h m	"	h m			"	
Nov. 16	0.8792	+52.95	+3.530	348 53	23 15.5	32 34	2 10.3	+1.3704	+1.2991	+4.65	+0.6675
17	0.8819	53.06	3.537	348 54	23 15.6	31 35	2 6.3	1.3712	1.2997	4.53	0.6565
h 18	0.8847	53.14	3.543	348 56	23 15.7	30 36	2 2.4	1.3718	1.3003	4.41	0.6450
(4.0) 19	0.8874	53.22	3.548	349 1	23 16.1	29 38	1 58.5	1.3723	1.3009	4.29	0.6329
20	0.8902	53.30	3.553	349 8	23 16.5	28 40	1 54.7	1.3729	1.3014	4.17	0.6202
21	0.8929	+53.41	+3.561	349 17	23 17.1	27 42	1 50.8	+1.3735	+1.3019	+4.05	+0.6070
22	0.8956	53.57	3.571	349 28	23 17.9	26 44	1 46.9	1.3746	1.3025	3.93	0.5933
23	0.8984	53.77	3.585	349 40	23 18.7	25 47	1 43.1	1.3759	1.3030	3.80	0.5790
24	0.9011	54.00	3.600	349 50	23 19.3	24 49	1 39.3	1.3776	1.3035	3.67	0.5640
25	0.9039	54.25	3.617	349 57	23 19.8	23 52	1 35.5	1.3794	1.3040	3.54	0.5484
26	0.9066	+54.52	+3.635	350 3	23 20.2	22 55	1 31.7	+1.3814	+1.3045	+3.41	+0.5322
27	0.9093	54.75	3.650	350 5	23 20.3	21 57	1 27.8	1.3832	1.3050	3.28	0.5154
28	0.9121	54.96	3.664	350 6	23 20.4	21 0	1 24.0	1.3849	1.3054	3.14	0.4975
29	0.9148	55.15	3.677	350 5	23 20.3	20 3	1 20.2	1.3863	1.3058	3.01	0.4786
30	0.9176	55.29	3.686	350 4	23 20.3	19 6	1 16.4	1.3875	1.3062	2.87	0.4587
Dec. 1	0.9203	+55.39	+3.693	350 4	23 20.3	18 9	1 12.6	+1.3883	+1.3066	+2.74	+0.4377
2	0.9230	55.47	3.698	350 6	23 20.4	17 12	1 8.8	1.3889	1.3070	2.61	0.4155
3	0.9258	55.56	3.703	350 11	23 20.7	16 15	1 5.0	1.3894	1.3074	2.47	0.3920
h 4	0.9285	55.64	3.709	350 18	23 21.2	15 18	1 1.2	1.3900	1.3078	2.33	0.3670
(5.0) 5	0.9313	55.77	3.718	350 27	23 21.8	14 22	0 57.5	1.3908	1.3081	2.19	0.3402
6	0.9340	+55.93	+3.729	350 36	23 22.4	13 26	0 53.7	+1.3918	+1.3084	+2.05	+0.3116
7	0.9367	56.14	3.741	350 45	23 23.0	12 29	0 49.9	1.3931	1.3087	1.91	0.2811
8	0.9395	56.35	3.757	350 53	23 23.6	11 33	0 46.2	1.3947	1.3090	1.77	0.2476
9	0.9422	56.60	3.773	350 58	23 23.9	10 36	0 42.4	1.3965	1.3093	1.63	0.2114
10	0.9450	56.86	3.791	351 1	23 24.1	9 40	0 38.7	1.3984	1.3095	1.48	0.1719
11	0.9477	+57.07	+3.805	351 1	23 24.1	8 44	0 34.9	+1.4001	+1.3097	+1.34	+0.1281
12	0.9504	57.27	3.818	351 0	23 24.0	7 47	0 31.1	1.4016	1.3099	1.20	0.0793
13	0.9531	57.42	3.828	350 58	23 23.9	6 51	0 27.4	1.4028	1.3101	1.05	0.0247
14	0.9559	57.55	3.837	350 56	23 23.7	5 55	0 23.7	1.4039	1.3102	0.91	9.9612
15	0.9586	57.66	3.844	350 56	23 23.7	4 59	0 19.9	1.4047	1.3103	0.76	9.8871
16	0.9613	+57.76	+3.851	350 57	23 23.8	4 3	0 16.2	+1.4053	+1.3104	+0.62	+9.7971
17	0.9640	57.86	3.857	351 1	23 24.1	3 7	0 12.5	1.4060	1.3105	0.48	9.6830
18	0.9658	57.98	3.865	351 8	23 24.5	2 11	0 8.7	1.4068	1.3105	0.33	9.5292
h 19	0.9695	58.15	3.877	351 15	23 25.0	1 15	0 5.0	1.4079	1.3106	0.19	9.2869
(6.0) 20	0.9723	58.35	3.890	351 24	23 25.6	0 19	0 1.3	1.4093	1.3106	+0.04	+8.6893
21	0.9750	+58.60	+3.907	351 31	23 26.1	359 23	23 57.5	+1.4110	+1.3106	-0.10	-8.9809
22	0.9777	58.86	3.924	351 37	23 26.5	358 27	23 53.8	1.4128	1.3105	0.24	9.3811
23	0.9805	59.13	3.942	351 40	23 26.7	357 31	23 50.1	1.4147	1.3105	0.39	9.5857
24	0.9832	59.40	3.960	351 41	23 26.7	356 35	23 46.3	1.4167	1.3104	0.53	9.7241
25	0.9860	59.65	3.977	351 39	23 26.6	355 39	23 42.6	1.4185	1.3103	0.68	9.8286
26	0.9887	+59.84	+3.989	351 36	23 26.4	354 42	23 38.8	+1.4200	+1.3102	-0.82	-9.9129
27	0.9914	60.01	4.001	351 33	23 26.2	353 46	23 35.1	1.4212	1.3101	0.96	9.9832
28	0.9942	60.13	4.009	351 30	23 26.0	352 50	23 31.3	1.4222	1.3100	1.11	0.0435
29	0.9969	60.23	4.015	351 29	23 25.9	351 54	23 27.6	1.4229	1.3098	1.25	0.0962
30	0.9997	60.31	4.021	351 30	23 26.0	350 58	23 23.9	1.4235	1.3096	1.39	0.1434
31	1.0024	+60.40	+4.027	351 33	23 26.2	350 1	23 20.1	+1.4241	+1.3094	-1.53	-0.1857
32	1.0051	+60.51	+4.034	351 39	23 26.6	349 5	23 16.3	+1.4248	+1.3092	-1.68	-0.2242

MEAN PLACES FOR 1897.0. (January 0^d.0—0^d.624, Washington.)

Name of Star.	Magni- tude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		h m s	s	° ' "	"
<i>a</i> Andromedæ . . .	2.1	0 3 3.760	+ 3.0928	+ 28 31 18.26	+19.884
* <i>β</i> Cassiopeiæ . . .	2.4	0 3 40.830	3.1781	+ 58 34 52.77	19.850
* 22 Andromedæ . . .	4.9	0 4 58.005	3.1048	+ 45 29 55.94	20.034
4 Draconis (H.) . S. P.	5.1	0 7 22.957	2.8767	+101 48 41.17	20.021
<i>γ</i> Pegasi (<i>Algenib.</i>) . .	2.8	0 7 55.877	3.0845	+ 14 36 39.21	20.022
* <i>σ</i> Andromedæ . . .	4.4	0 12 56.787	+ 3.1248	+ 36 12 50.81	+19.980
* <i>ι</i> Ceti . . .	3.6	0 14 10.597	3.0526	- 9 23 42.82	19.954
* 6 Ursæ Minoris . S. P.	6.2	0 14 21.762	0.2310	+ 91 43 44.15	19.940
* 44 Piscium . . .	5.8	0 20 7.322	3.0734	+ 1 22 9.34	19.951
<i>β</i> Hydri . . .	2.8	0 20 20.121	3.2199	- 77 50 3.82	20.281
12 Ceti . . .	6.0	0 24 46.916	+ 3.0611	- 4 31 34.92	+19.934
* <i>κ</i> Draconis . . S. P.	3.8	0 29 5.353	2.5878	+109 38 38.77	19.885
* <i>π</i> Andromedæ . . .	4.4	0 31 22.677	3.1924	+ 33 9 8.23	19.866
* <i>a</i> Cassiopeiæ (<i>var.</i>) . .	2.3	0 34 39.683	3.3780	+ 55 58 20.53	19.782
<i>β</i> Ceti . . .	2.2	0 38 25.191	3.0139	- 18 33 7.52	19.796
21 Cassiopeiæ . . .	5.7	0 38 50.270	+ 3.8699	+ 74 25 30.30	+19.744
* <i>o</i> Cassiopeiæ . . .	4.7	0 38 58.991	3.3223	+ 47 43 14.00	19.748
* <i>δ</i> Piscium . . .	4.8	0 43 20.243	3.1080	+ 7 1 28.15	19.646
32 ^a Camelop. (H.) . S. P.	5.2	0 48 22.269	0.4087	+ 96 1 38.40	19.595
* <i>γ</i> Cassiopeiæ . . .	2.3	0 50 29.353	3.5844	+ 60 9 31.87	19.555
* <i>μ</i> Andromedæ . . .	4.0	0 51 2.042	+ 3.3134	+ 37 56 26.78	+19.609
* 43 Cephei (H.) . . .	4.6	0 54 39.234	7.3391	+ 85 42 16.48	19.485
* <i>ε</i> Piscium . . .	4.3	0 57 35.805	3.1098	+ 7 20 8.03	19.446
* <i>β</i> Andromedæ . . .	2.2	1 3 57.844	3.3465	+ 35 4 27.83	19.155
* <i>κ</i> Tucanæ . . .	4.9	1 12 16.792	2.0538	- 69 25 22.98	19.163
* <i>f</i> Piscium . . .	5.1	1 12 29.091	+ 3.0902	+ 3 4 19.32	+19.028
* <i>θ</i> ¹ Ceti . . .	3.6	1 18 52.469	2.9972	- 8 42 53.52	18.657
<i>a</i> Ursæ Minoris (<i>Polaris</i>)	2.2	1 21 18.965	24.6375	+ 88 45 30.31	18.802
38 Cassiopeiæ . . .	5.9	1 23 33.614	4.3888	+ 69 44 3.94	18.659
* <i>κ</i> Octantis . . S. P.	5.4	1 24 17.278	8.8603	- 94 44 31.28	18.714
<i>η</i> Piscium . . .	3.7	1 25 58.246	+ 3.2036	+ 14 48 53.39	+18.651
* <i>υ</i> Andromedæ . . .	4.2	1 30 45.066	3.5071	+ 40 53 25.53	18.131
* <i>π</i> Piscium . . .	5.5	1 31 38.263	3.1751	+ 11 36 53.30	18.519
* <i>a</i> Eridani (<i>Achernar</i>) . .	0.4	1 33 52.318	2.2314	- 57 45 36.36	18.346
* <i>ν</i> Piscium . . .	4.6	1 36 4.235	3.1185	+ 4 57 58.86	18.315
<i>o</i> Piscium . . .	4.4	1 39 57.234	+ 3.1631	+ 8 38 20.74	+18.202
* <i>ζ</i> Ceti . . .	3.6	1 46 22.580	2.9619	- 10 50 42.23	17.808
<i>β</i> Arietis . . .	2.8	1 48 56.919	3.3049	+ 20 18 16.13	17.711
50 Cassiopeiæ . . .	4.1	1 54 37.973	5.0254	+ 71 55 22.33	17.619
* <i>γ</i> Andromedæ . . .	2.2	1 57 34.481	3.6634	+ 41 50 7.43	17.423
<i>a</i> Arietis . . .	2.1	2 1 21.951	+ 3.3725	+ 22 58 31.18	+17.154
<i>a</i> Draconis . . S. P.	3.7	2 1 36.098	1.6241	+115 7 55.35	17.290
* <i>β</i> Trianguli . . .	3.1	2 3 24.821	3.5569	+ 34 30 0.21	17.184
* <i>ξ</i> ¹ Ceti . . .	4.5	2 7 32.409	+ 3.1749	+ 8 21 48.40	17.012
* 4 Ursæ Minoris . S. P.	4.9	2 9 14.807	- 0.3110	+101 58 6.29	16.904
* <i>γ</i> Trianguli . . .	4.3	2 11 11.372	+ 3.5532	+ 33 22 15.03	+16.824
* 67 Ceti . . .	5.6	2 11 50.696	2.9897	- 6 53 49.10	16.715
* <i>δ</i> Hydri . . .	4.2	2 19 55.007	1.0569	- 69 7 40.83	16.443
<i>ι</i> Cassiopeiæ . . .	4.6	2 20 34.223	4.8721	+ 66 56 21.11	16.402
<i>ξ</i> ² Ceti . . .	4.5	2 22 40.928	+ 3.1846	+ 7 59 53.72	+16.274

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

MEAN PLACES FOR 1897.0. (January 0^d.0—0^d.624, Washington.)

Name of Star.	Magni- tude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		^h ^m ^s	^s	[°] ['] ["]	["]
* 5 Ursæ Minoris . S. P.	4.5	2 27 44.501	- 0.1813	+103 50 46.23	+16.012
* μ Hydri	5.3	2 33 50.567	- 1.4156	- 79 33 30.44	15.690
* δ Ceti	4.1	2 34 12.181	+ 3.0734	- 0 6 57.84	15.676
* θ Persei	4.2	2 37 9.772	4.0736	+ 48 47 33.52	15.430
γ Ceti	3.6	2 37 57.751	3.1040	+ 2 48 5.85	15.317
* α Arietis	5.5	2 45 48.296	+ 3.3056	+ 14 39 26.94	+14.990
β Ursæ Minoris . S. P.	2.2	2 51 0.238	- 0.2233	+105 25 24.99	14.720
* 47 Cephei (H.) . .	5.7	2 52 23.011	+ 7.7563	+ 79 0 40.85	14.639
* ε Arietis	4.6	2 53 19.281	3.4224	+ 20 55 42.28	14.585
α Ceti	2.6	2 56 53.655	3.1311	+ 3 41 7.92	14.285
* β Persei (<i>Algol</i>) (<i>var.</i>) .	2.3	3 1 27.890	+ 3.8863	+ 40 33 31.04	+14.090
48 Cephei (H.) . .	5.5	3 7 14.647	7.4337	+ 77 21 21.88	13.671
ζ Arietis	4.8	3 8 58.795	3.4407	+ 20 39 45.39	13.529
α Persei	1.9	3 16 58.077	+ 4.2612	+ 49 29 39.85	13.057
* ι Hydri	5.7	3 18 31.537	- 1.5835	- 77 45 52.19	13.039
* ρ Octantis . . S. P.	5.7	3 19 32.115	+13.0830	- 95 52 42.41	+12.879
γ ³ Ursæ Minoris . S. P.	3.2	3 20 53.497	- 0.1280	+107 47 58.22	12.812
* f Tauri	4.3	3 25 11.104	+ 3.3059	+ 12 35 1.27	12.541
ε Eridani	3.7	3 28 4.627	2.8240	- 9 48 24.34	12.370
δ Persei	3.1	3 35 35.412	4.2531	+ 47 27 28.70	11.772
* γ Camelopardalis (H.) .	4.6	3 39 28.835	+ 6.2505	+ 71 0 52.63	+11.489
η Tauri	3.1	3 41 21.613	3.5582	+ 23 47 11.20	11.348
ζ Persei	3.0	3 47 39.382	+ 3.7619	+ 31 34 38.82	10.915
ζ Ursæ Minoris . S. P.	4.6	3 47 44.239	- 2.2362	+101 53 19.30	10.941
* γ Hydri	3.3	3 48 49.809	- 0.9885	- 74 33 16.34	10.990
* ε Persei	3.0	3 50 56.369	+ 4.0121	+ 39 42 43.47	+10.685
γ Eridani	3.0	3 53 13.461	2.7989	- 13 48 5.93	10.420
* A ¹ Tauri	4.6	3 58 36.320	3.5411	+ 21 48 0.35	10.051
* c Persei	4.3	4 1 10.940	4.3398	+ 47 26 14.18	9.899
Groombr. 2320 . S. P.	5.5	4 6 2.173	0.1428	+111 55 6.34	9.496
* o ¹ Eridani	4.2	4 6 50.240	+ 2.9270	- 7 6 22.79	+ 9.589
γ Tauri	3.8	4 13 55.875	+ 3.4098	+ 15 22 43.66	8.925
* η Ursæ Minoris . S. P.	5.0	4 20 30.790	- 1.8078	+104 0 26.23	8.180
η Draconis . . S. P.	2.8	4 22 35.905	+ 0.8077	+118 15 9.85	8.213
ε Tauri	3.6	4 22 36.074	+ 3.4984	+ 18 57 6.48	8.223
* δ Mensæ	5.6	4 24 56.440	- 4.2029	- 80 27 20.79	+ 8.087
* m Persei	6.0	4 26 10.026	+ 4.2120	+ 42 50 36.70	7.963
A Draconis . . S. P.	5.0	4 28 11.242	- 0.1319	+111 0 33.26	7.799
α Tauri (<i>Aldebaran</i>) .	1.0	4 30 0.578	+ 3.4382	+ 16 18 7.50	7.482
* τ Tauri	4.5	4 36 3.729	3.5963	+ 22 45 32.86	7.155
α Camelopardalis . .	4.4	4 43 48.310	+ 5.9301	+ 66 10 2.66	+ 6.543
* ι Tauri	5.2	4 45 20.887	3.5061	+ 18 39 51.46	6.371
ι Aurigæ	2.8	4 50 17.124	3.9017	+ 33 0 10.27	5.985
* ζ Aurigæ	3.9	4 55 16.643	+ 4.1864	+ 40 55 31.28	5.582
ε Ursæ Minoris . S. P.	4.5	4 56 31.378	- 6.3079	+ 97 47 36.05	5.485
11 Orionis	4.7	4 58 40.951	+ 3.4249	+ 15 15 37.64	+ 5.262
* β Eridani	2.9	5 2 47.156	2.9488	- 5 13 10.68	4.896
α Aurigæ (<i>Capella</i>) . .	0.1	5 9 4.767	4.4259	+ 45 53 34.74	3.983
β Orionis (<i>Rigel</i>) . .	0.3	5 9 35.248	2.8816	- 8 19 14.84	4.369
* τ Orionis	3.8	5 12 36.296	+ 2.9130	- 6 57 21.58	+ 4.106

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

MEAN PLACES FOR 1897.0. (January 0^d.0—0^d.624, Washington.)

Name of Star.	Magni- tude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		h m s	s	° ' "	"
β Tauri	1.8	5 19 46.822	+ 3.7899	+ 28 31 12.86	+3.321
Groombridge 966	6.4	5 25 57.581	8.0061	+ 74 58 30.90	2.986
* χ Aurigæ	5.0	5 26 1.515	3.9056	+ 32 6 57.73	2.981
δ Orionis (<i>var.</i>)	2.3	5 26 44.654	3.0637	- 0 22 31.96	2.895
α Leporis	2.7	5 28 11.232	2.6450	- 17 53 46.11	2.774
* Groombridge 944	6.4	5 28 59.084	+18.6982	+ 85 8 42.23	+2.719
ϵ Orionis	1.8	5 30 59.191	3.0426	- 1 16 4.16	2.533
α Columbæ	2.7	5 35 55.222	+ 2.1729	- 34 7 45.18	2.058
ω Draconis . . . S. P.	4.9	5 37 33.329	- 0.3530	+111 11 40.15	1.637
* κ Orionis	2.3	5 42 52.255	+ 2.8450	- 9 42 22.85	1.500
ϕ^1 Draconis . . . S. P.	4.8	5 43 46.129	- 1.0776	+107 48 2.60	+1.692
ν Aurigæ	4.1	5 44 21.000	+ 4.1547	+ 39 7 5.46	1.405
* δ Doradus	4.4	5 44 35.490	0.1054	- 65 46 26.92	1.327
α Orionis (<i>var.</i>)	0.9	5 49 35.714	3.2472	+ 7 23 15.66	0.918
* β Aurigæ	2.0	5 51 58.424	4.4020	+ 44 56 11.98	0.692
* θ Aurigæ	2.9	5 52 41.900	+ 4.0922	+ 37 12 18.64	+0.550
ν Orionis	4.5	6 1 41.536	+ 3.4275	+ 14 46 50.02	-0.178
δ Ursæ Minoris . . . S. P.	4.4	6 5 31.319	-19.4810	+ 93 23 13.80	0.534
22 Camelopardalis (H.) . . .	4.7	6 7 29.523	+ 6.6167	+ 69 21 20.40	0.773
* γ Geminorum	3.5	6 8 39.659	3.6228	+ 22 32 11.45	0.774
μ Geminorum	3.2	6 16 43.794	+ 3.6314	+ 22 33 58.34	-1.584
* ϕ^1 Aurigæ	5.1	6 16 58.001	4.6261	+ 49 20 24.81	1.494
α Argûs (<i>Canopus</i>)	-0.8	6 21 40.000	1.3305	- 52 38 21.81	1.884
* ν Geminorum	4.2	6 22 50.831	+ 3.5630	+ 20 16 37.64	2.018
* χ Draconis . . . S. P.	5.3	6 22 54.776	- 1.0802	+107 18 43.11	1.627
γ Geminorum	2.0	6 31 45.712	+ 3.4672	+ 16 29 13.31	-2.818
* ϵ Geminorum	3.2	6 37 35.700	3.6931	+ 25 13 58.68	3.289
* ϕ^5 Aurigæ	5.4	6 39 18.877	4.3283	+ 43 40 46.96	3.275
† α Canis Majoris (<i>Sirius</i>) . . .	-1.4	6 40 36.563	2.6436	- 16 34 29.82	4.741
* θ Geminorum	3.7	6 46 0.093	+ 3.9600	+ 34 5 7.48	4.030
* ζ Mensæ	5.6	6 48 37.202	- 4.9140	- 80 42 18.59	-4.141
50 Draconis . . . S. P.	5.6	6 49 41.685	- 1.9122	+104 41 15.12	4.389
51 Cephei (H.)	5.3	6 52 13.922	+29.7150	+ 87 12 34.13	4.568
ϵ Canis Majoris	1.5	6 54 34.693	2.3578	- 28 49 55.68	4.743
* ζ Geminorum (<i>var.</i>)	4.0	6 58 0.058	3.5620	+ 20 43 16.05	5.039
δ Canis Majoris	1.9	7 4 12.186	+ 2.4386	- 26 13 46.75	-5.535
* 63 Aurigæ	5.2	7 4 34.315	4.1355	+ 39 29 18.88	5.557
* 25 Camelopardalis	5.3	7 9 25.224	+12.9215	+ 82 36 34.78	6.014
* γ^3 Volantis (<i>var.</i>)	3.9	7 9 37.124	- 0.4960	- 70 19 55.88	5.999
δ Draconis . . . S. P.	3.1	7 12 31.939	+ 0.0277	+112 31 10.77	6.327
δ Geminorum	3.5	7 13 58.334	+ 3.5874	+ 22 10 18.51	-6.376
τ Draconis . . . S. P.	4.5	7 17 32.185	- 1.1214	+106 50 8.76	6.764
Piazzii vii, 67	5.7	7 20 10.055	+ 6.2921	+ 68 40 33.17	6.910
* β Canis Minoris	3.1	7 21 33.971	+ 3.2594	+ 8 29 48.02	7.024
λ Ursæ Minoris . . . S. P.	6.5	7 25 52.970	-67.0115	+ 91 1 5.81	7.348
α^3 Geminorum (<i>Castor</i>)	1.9	7 28 1.797	+ 3.8374	+ 32 6 52.13	-7.591
† α Canis Min. (<i>Procyon</i>)	0.5	7 33 54.624	3.1431	+ 5 29 19.69	9.024
β Geminorum (<i>Pollux</i>)	1.2	7 39 0.847	3.6782	+ 28 16 29.40	8.452
ϕ Geminorum	5.0	7 47 11.679	3.6790	+ 27 1 56.45	9.065
* 26 Lyncis	5.8	7 47 12.807	+ 4.3858	+ 47 49 52.69	-9.062

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

† Periodic corrections given in the Appendix are still to be applied to the positions of Sirius and Procyon.

MEAN PLACES FOR 1897.0. (January 0 ^d .0—0 ^d .624, Washington.)						
Name of Star.	Magni- tude.	Right Ascension.			Annual Variation.	Declination.
		h	m	s	s	"
* Groombridge 1374	5.6	7	47	51.945	+7.2720	+ 74 11 34.11
* ε Draconis S. P.	3.9	7	48	31.188	-0.1825	+109 59 39.78
* ω ¹ Cancrī	6.0	7	54	42.008	+3.6363	+ 25 40 29.19
3 Ursæ Majoris (H.)	5.5	8	2	34.141	6.0399	+ 68 46 37.23
15 Argûs (ρ)	3.1	8	3	9.451	2.5545	- 24 0 26.77
* ζ ¹ Cancrī	4.8	8	6	18.320	+3.4456	+ 17 57 27.80
* β Cancrī	3.8	8	10	55.788	+3.2580	+ 9 30 9.97
* κ Cephei (pr.) S. P.	4.4	8	12	21.448	-1.9357	+102 35 55.52
* 30 Monocerotis	3.9	8	20	30.822	-2.9998	- 3 34 13.37
* θ Chamæleontis	4.6	8	23	43.599	-1.7227	- 77 9 7.76
η Cancrī	5.4	8	26	45.238	+3.4773	+ 20 47 27.33
Groombr. 3241 S. P.	6.5	8	30	27.102	-0.2250	+107 49 2.12
* ε Hydræ	4.5	8	33	22.607	+3.1454	+ 3 42 10.46
* γ Cancrī	4.9	8	37	19.591	3.4794	+ 21 50 19.56
* ε Hydræ	3.5	8	41	19.339	3.1812	+ 6 47 47.74
* σ ² Cancrī (mean)	5.5	8	47	57.689	+3.6719	+ 30 58 9.74
ι Ursæ Majoris	3.3	8	52	9.387	+4.1300	+ 48 26 45.29
12 Year Cat. 1879 S. P.	5.3	8	52	15.718	-2.5729	+ 99 50 2.46
σ ³ Ursæ Majoris	5.0	9	1	19.958	+5.3447	+ 67 33 9.67
* κ Cancrī	5.1	9	2	10.179	3.2551	+ 11 4 57.75
* θ Hydræ	4.0	9	9	0.390	+3.1257	+ 2 44 55.19
* β Argûs	2.0	9	12	4.147	0.6751	- 69 17 34.49
ι Argûs	2.6	9	14	19.782	1.6009	- 58 50 33.62
* α Lyncis	3.3	9	14	46.826	3.6672	+ 34 49 40.19
* α Cephei S. P.	2.6	9	16	7.311	1.4360	+117 51 3.29
ι Draconis (H.)	4.5	9	22	24.538	+8.9402	+ 81 46 53.53
* α Hydræ	2.1	9	22	31.568	2.9490	- 8 12 44.04
δ Ursæ Majoris	4.8	9	25	22.482	5.3882	+ 70 16 58.25
θ Ursæ Majoris	3.2	9	25	58.069	4.0370	+ 52 8 47.70
β Cephei (pr.) S. P.	3.4	9	27	19.854	0.7915	+109 53 29.61
* 10 Leonis Minoris	4.7	9	27	54.922	+3.6920	+ 36 51 17.46
* ο Leonis	3.8	9	35	39.229	+3.2062	+ 10 21 38.96
* ζ Chamæleontis	5.2	9	36	55.357	-1.5843	- 80 28 42.95
* ε Leonis	3.2	9	40	0.332	+3.4137	+ 24 14 54.23
11 Cephei S. P.	4.8	9	40	24.932	0.8989	+109 9 46.16
μ Leonis	4.0	9	46	54.389	+3.4206	+ 26 29 31.28
* 19 Leonis Minoris	5.2	9	51	22.661	3.6926	+ 41 32 46.04
79 Draconis S. P.	6.6	9	51	34.727	0.7256	+106 47 5.84
* π Leonis	5.0	9	54	46.247	3.1737	+ 8 32 18.00
α Leonis (Regulus)	1.3	10	2	53.230	3.1998	+ 12 28 13.98
32 Ursæ Majoris	5.7	10	10	33.359	+4.4123	+ 65 37 18.94
* λ Ursæ Majoris	3.6	10	10	53.148	3.6367	+ 43 25 41.98
γ ¹ Leonis	2.5	10	14	17.670	3.3137	+ 20 21 45.10
* μ Hydræ	4.1	10	21	6.577	2.9010	- 16 18 39.22
* β Leonis Minoris	4.3	10	21	55.718	3.4844	+ 37 14 6.12
* α Antliæ	4.5	10	22	26.253	+2.7398	- 30 32 37.38
9 Draconis (H.)	5.0	10	26	21.027	5.2420	+ 76 14 36.26
ρ Leonis	4.0	10	27	23.331	3.1635	+ 9 50 11.48
226 Cephei (B.) S. P.	5.7	10	30	28.068	1.0748	+104 18 15.92
* β Octantis S. P.	4.4	10	35	31.693	+6.4355	- 98 4 43.54

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

MEAN PLACES FOR 1897.0. (January 0^d.0—0^d.624, Washington.)

Name of Star.	Magni- tude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		h m s	s	° ' "	"
* 41 Leonis Minoris . . .	5.1	10 37 48.974	+3.2695	+ 23 43 39.48	-18.751
η Argūs (<i>var.</i>) . . .	1-6	10 41 3.790	2.3151	- 59 8 34.83	18.878
ι Leonis . . .	5.3	10 43 50.652	3.1579	+ 11 5 24.57	18.984
* δ Chamæleontis . . .	4.7	10 44 49.326	0.6307	- 79 59 49.90	18.984
ι Cephei . S. P.	3.6	10 46 0.660	2.1235	+114 20 29.19	18.884
* 46 Leonis Minoris . . .	3.9	10 47 33.140	+3.3676	+ 34 46 13.37	-19.307
* Groombridge 1706 . . .	6.3	10 51 43.042	4.9458	+ 78 19 19.13	19.198
α Ursæ Majoris . . .	2.0	10 57 22.350	+3.7414	+ 62 18 25.40	19.375
* η Octantis . . .	6.1	11 0 3.348	-0.2373	- 84 2 23.40	19.370
* ϕ ³ Leonis . . .	6.2	11 1 38.878	+3.0596	+ 2 30 52.60	19.492
* φ Ursæ Majoris . . .	3.2	11 3 52.416	+3.3906	+ 45 3 25.05	-19.513
δ Leonis . . .	2.7	11 8 37.885	3.1973	+ 21 5 16.58	19.693
* υ Ursæ Majoris . . .	3.7	11 12 55.150	3.2559	+ 33 39 23.04	19.580
δ Crateris . . .	3.9	11 14 11.470	2.9968	- 14 13 16.87	19.470
ο Cephei . S. P.	5.1	11 14 23.786	2.4471	+112 27 7.07	19.674
τ Leonis . . .	5.1	11 22 38.416	+3.0859	+ 3 25 24.33	-19.808
λ Draconis . . .	4.0	11 25 17.316	3.6131	+ 69 53 58.25	19.844
* ε Hydræ . . .	3.8	11 27 56.087	2.9442	- 31 17 16.17	19.890
υ Leonis . . .	4.4	11 31 40.502	3.0713	- 0 15 18.63	19.864
γ Cephei . S. P.	3.5	11 35 6.894	2.4210	+102 56 33.49	20.078
* χ Ursæ Majoris . . .	3.9	11 40 36.800	+3.1878	+ 48 21 1.51	-19.964
β Leonis . . .	2.2	11 43 48.377	3.0634	+ 15 8 52.00	20.122
γ Ursæ Majoris . . .	2.4	11 48 24.924	3.1785	+ 54 16 2.26	20.028
Groombr. 4163 . S. P.	6.6	11 49 49.291	2.8720	+106 9 46.47	20.023
* π Virginis . . .	4.6	11 55 35.652	3.0740	+ 7 11 18.48	20.087
ο Virginis . . .	4.3	11 59 57.742	+3.0573	+ 9 18 18.03	-20.014
* ε Corvi . . .	3.2	12 4 49.618	3.0840	- 22 2 48.91	20.048
4 Draconis (H.) . . .	5.1	12 7 22.957	2.8767	+ 78 11 18.83	20.021
γ Corvi . . .	2.7	12 10 30.527	3.0804	- 16 58 12.32	20.015
* 2 Canum Venaticorum . . .	6.0	12 10 57.972	3.0203	+ 41 14 1.00	20.063
β Chamæleontis . . .	4.5	12 12 18.131	+3.4139	- 78 44 24.38	-20.000
* 6 Ursæ Minoris . . .	6.2	12 14 21.762	0.2310	+ 88 16 15.85	19.940
η Virginis . . .	4.0	12 14 38.181	3.0688	- 0 5 40.20	20.039
α ¹ Crucis . . .	0.9	12 20 52.108	3.3003	- 62 31 41.77	20.010
* δ Corvi . . .	3.1	12 24 32.211	3.1034	- 15 56 30.59	20.081
* β Canum Venaticorum . . .	4.4	12 28 51.128	+2.8581	+ 41 55 1.40	-19.611
β Corvi . . .	2.8	12 28 58.544	3.1429	- 22 49 37.99	19.958
κ Draconis . . .	3.8	12 29 5.353	2.5878	+ 70 21 21.23	19.885
* γ Virginis (<i>mean</i>) . . .	2.9	12 36 26.481	3.0386	- 0 53 5.06	19.806
21 Cassiopeiæ . S. P.	5.7	12 38 50.270	3.8699	+105 34 29.70	19.744
* 31 Comæ Berenices . . .	5.1	12 46 41.033	+2.9295	+ 28 6 3.67	-19.654
32 ³ Camelopardalis (H.) . . .	5.2	12 48 22.269	0.4087	+ 83 58 21.60	19.595
* γ Cassiopeiæ . S. P.	2.3	12 50 29.353	3.5844	+119 50 28.13	19.555
α Canum Venaticorum . . .	3.2	12 51 12.664	2.8143	+ 38 52 28.36	19.505
* 43 Cephei (H.) . S. P.	4.6	12 54 39.234	7.3391	+ 94 17 43.52	19.485
* δ Muscæ . . .	3.8	12 55 12.344	+4.2148	- 70 59 34.41	-19.465
* ε Virginis . . .	3.1	12 57 3.018	2.9879	+ 11 30 45.73	19.409
θ Virginis . . .	4.6	13 4 36.959	3.1017	- 4 59 21.06	19.302
* 20 Canum Venaticorum . . .	4.7	13 12 55.472	2.6958	+ 41 6 53.28	19.026
α Virginis (<i>Spica</i>) . . .	1.1	13 19 45.946	+3.1545	- 10 37 25.61	-18.888

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

MEAN PLACES FOR 1897.0. (January 0^d.0—0^d.624, Washington.)

Name of Star.	Magni- tude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		^h ^m ^s	^s	[°] ['] ["]	["]
α Urs.Min. (<i>Polaris</i>) S. P.	2.2	13 21 18.965	+24.6375	+ 91 14 29.69	-18.802
38 Cassiopeiaë . S. P.	5.9	13 23 33.614	4.3888	+110 15 56.06	18.659
* κ Octantis	5.4	13 24 17.278	8.8603	- 85 15 28.72	18.714
ζ Virginis	3.6	13 29 26.649	3.0536	- 0 4 9.49	18.505
* B. A. C. 4536 . . .	5.0	13 30 11.842	2.6816	+ 37 42 36.07	18.528
* m Virginis	5.4	13 36 12.323	+ 3.1441	- 8 10 59.52	-18.271
η Ursæ Majoris . . .	1.9	13 43 29.007	2.3705	+ 49 49 37.94	18.067
η Bootis	2.8	13 49 46.835	2.8567	+ 18 54 50.50	18.156
50 Cassiopeiaë . S. P.	4.1	13 54 37.973	5.0254	+108 4 37.67	17.619
* θ Apodis (<i>var.</i>) . . .	5.0	13 55 17.643	5.6968	- 76 17 56.53	17.562
β Centauri	0.7	13 56 32.920	+ 4.1840	- 59 52 34.36	-17.568
* π Hydrae	3.6	14 0 30.222	3.4026	- 26 11 6.85	17.345
α Draconis	3.7	14 1 36.098	1.6241	+ 64 52 4.65	17.290
* δ Bootis	4.8	14 5 42.144	2.7386	+ 25 34 46.15	17.184
* κ Virginis	4.2	14 7 24.047	+ 3.1948	- 9 47 39.72	16.906
* 4 Ursæ Minoris . . .	4.9	14 9 14.807	- 0.3110	+ 78 1 53.71	-16.904
* δ Octantis	5.0	14 10 24.473	+ 9.0537	- 83 11 44.54	16.903
α Bootis (<i>Arcturus</i>) . .	0.2	14 10 57.799	2.7352	+ 19 43 6.97	18.868
* λ Bootis	4.3	14 12 28.086	2.2523	+ 46 33 40.25	16.646
* λ Virginis	4.7	14 13 32.136	3.2390	- 12 53 49.44	16.727
ϵ Cassiopeiaë . S. P.	4.6	14 20 34.223	+ 4.8721	+113 3 38.89	-16.402
θ Bootis	4.1	14 21 41.494	2.0441	+ 52 19 36.22	16.749
ρ Bootis	3.6	14 27 23.538	+ 2.5876	+ 30 49 24.31	15.944
5 Ursæ Minoris	4.5	14 27 44.501	- 0.1813	+ 76 9 13.77	16.012
α Centauri (<i>mean</i>) . .	0.1	14 32 36.132	+ 4.0400	- 60 24 36.72	15.031
* μ Hydri S. P.	5.3	14 33 50.567	- 1.4156	-100 26 29.56	-15.690
* 33 Bootis	5.3	14 35 0.247	+ 2.2342	+ 44 50 55.51	15.695
* α Apodis	4.1	14 35 4.158	7.2263	- 78 36 26.89	15.636
ϵ Bootis	2.6	14 40 29.392	2.6214	+ 27 30 30.12	15.323
α^3 Libræ	2.9	14 45 10.734	+ 3.3107	- 15 36 49.63	15.144
β Ursæ Minoris	2.2	14 51 0.238	- 0.2233	+ 74 34 35.01	-14.720
* 47 Cephei (H.) . S. P.	5.7	14 52 23.011	+ 7.7563	+100 59 19.15	14.639
* γ Scorpïi	3.4	14 58 2.412	3.5009	- 24 52 37.66	14.352
β Bootis	3.7	14 58 3.998	2.2601	+ 40 47 48.14	14.343
48 Cephei (H.) . S. P.	5.5	15 7 14.647	7.4337	+102 38 38.12	13.671
* δ Bootis	3.5	15 11 21.073	+ 2.4210	+ 33 41 57.20	-13.564
β Libræ	2.9	15 11 27.810	3.2226	- 9 0 10.48	13.484
* ρ Octantis	5.7	15 19 32.115	13.0830	- 84 7 17.59	12.879
μ^1 Bootis	4.5	15 20 35.982	+ 2.2664	+ 37 44 18.36	12.761
γ^2 Ursæ Minoris	3.2	15 20 53.497	- 0.1280	+ 72 12 1.78	12.812
* β Coronæ Borealis . . .	3.9	15 23 34.983	+ 2.4752	+ 29 27 38.04	-12.574
α Coronæ Borealis . . .	2.3	15 30 19.631	2.5395	+ 27 3 40.58	12.284
α Serpentis	2.7	15 39 11.650	2.9522	+ 6 44 58.46	11.525
* γ Camelop. (H.) . S. P.	4.6	15 39 28.835	6.2505	+108 59 7.37	11.489
ϵ Serpentis	3.7	15 45 40.880	+ 2.9876	+ 4 47 16.24	11.023
ζ Ursæ Minoris	4.6	15 47 44.239	- 2.2362	+ 78 6 40.70	-10.941
ϵ Coronæ Borealis . . .	4.1	15 53 19.459	+ 2.4835	+ 27 10 34.04	10.589
δ Scorpïi	2.6	15 54 14.538	3.5399	- 22 19 42.62	10.496
β^1 Scorpïi	2.9	15 59 26.841	3.4819	- 19 31 24.77	10.107
* δ^1 Apodis	4.9	16 4 57.250	+ 8.8000	- 78 26 8.46	- 9.649

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

MEAN PLACES FOR 1897.0. (January 0^d.0—0^d.624, Washington.)

Name of Star.	Magni- tude.	Right Ascension.			Annual Variation.	Declination.			Annual Variation.
		h	m	s	s	°	'	"	"
* ϕ Herculis	4.2	16	5	31.204	+ 1.8817	+ 45	12	17.75	-9.563
Groombridge 2320	5.5	16	6	2.173	0.1428	+ 68	4	53.66	9.496
δ Ophiuchi	2.8	16	8	56.842	3.1403	- 3	25	44.62	9.484
* ϵ Coronæ Borealis (<i>mean</i>)	5.3	16	10	49.206	2.2449	+ 34	7	11.42	9.236
τ Herculis	3.9	16	16	38.697	1.8014	+ 46	33	30.43	8.717
* γ Apodis	4.0	16	17	39.754	+ 9.0884	- 78	39	56.08	-8.660
* η Ursæ Minoris	5.0	16	20	30.790	- 1.8078	+ 75	59	33.77	8.180
η Draconis	2.8	16	22	35.905	+ 0.8077	+ 61	44	50.15	8.213
α Scorpii (<i>Antares</i>)	1.2	16	23	5.462	3.6713	- 26	12	12.20	8.266
β Herculis	2.8	16	25	47.519	+ 2.5778	+ 21	42	50.69	8.031
A Draconis	5.0	16	28	11.242	- 0.1319	+ 68	59	26.74	-7.799
ζ Ophiuchi	2.8	16	31	29.198	+ 3.2997	- 10	21	30.35	7.532
α Trianguli Australis	2.2	16	37	45.527	6.3104	- 68	50	17.52	7.092
η Herculis	3.7	16	39	21.842	2.0541	+ 39	7	5.20	7.000
α Camelopardalis . S. P.	4.4	16	43	48.310	5.9301	+113	49	57.34	6.543
κ Ophiuchi	3.4	16	52	47.568	+ 2.8378	+ 9	32	6.83	-5.803
ϵ Ursæ Minoris	4.5	16	56	31.378	- 6.3079	+ 82	12	23.95	5.485
δ Herculis	5.3	16	57	48.164	+ 2.2115	+ 33	43	2.78	5.374
* η Ophiuchi	2.5	17	4	28.192	3.4361	- 15	35	50.62	4.733
α^1 Herculis (<i>var.</i>)	3.2	17	9	57.040	2.7338	+ 14	30	27.83	4.317
* π Herculis	3.4	17	11	27.598	+ 2.0894	+ 36	55	30.76	-4.207
* θ Ophiuchi	3.3	17	15	40.980	3.6799	- 24	53	48.48	3.906
δ Ophiuchi (<i>var.</i>)	4.4	17	20	4.756	3.6596	- 24	4	49.66	3.607
* δ Aræ	3.8	17	21	48.112	5.4036	- 60	35	52.87	3.467
Groombridge 966 S. P.	6.4	17	25	57.581	8.0061	+105	1	29.10	2.986
β Draconis	3.0	17	28	6.346	+ 1.3538	+ 52	22	38.89	-2.782
* Groombridge 944 S. P.	6.4	17	28	59.084	18.6982	+ 94	51	17.77	2.719
α Ophiuchi	2.2	17	30	9.180	2.7831	+ 12	38	5.96	2.841
* ϵ Herculis	4.0	17	36	33.577	+ 1.6969	+ 46	3	39.79	2.048
ϵ Draconis	4.9	17	37	33.329	- 0.3530	+ 68	48	19.85	1.637
μ Herculis	3.5	17	42	25.664	+ 2.3467	+ 27	46	50.84	-2.296
ϕ^1 Draconis	4.8	17	43	46.129	- 1.0776	+ 72	11	57.40	1.692
* θ Herculis	3.9	17	52	43.196	+ 2.0553	+ 37	15	51.05	0.618
γ Draconis	2.5	17	54	12.855	1.3918	+ 51	30	3.16	0.536
γ^2 Sagittarii	2.9	17	59	11.448	3.8517	- 30	25	31.26	-0.289
* σ Herculis	3.9	18	3	31.482	+ 2.3395	+ 28	44	53.68	+0.311
δ Ursæ Minoris	4.4	18	5	31.319	-19.4810	+ 86	36	46.20	0.534
22 Camelop. (H.) . S. P.	4.7	18	7	29.523	+ 6.6167	+110	38	39.60	0.773
μ^1 Sagittarii	4.1	18	7	36.204	3.5867	- 21	5	8.50	0.652
η Serpentis	3.5	18	15	58.792	3.1025	- 2	55	30.70	0.722
* λ Sagittarii	2.9	18	21	36.836	+ 3.7025	- 25	28	43.71	+1.665
* χ Draconis	3.8	18	22	54.776	- 1.0802	+ 72	41	16.89	1.627
1 Aquilæ	4.0	18	29	36.124	+ 3.2645	- 8	18	58.19	2.253
ζ Pavonis	4.2	18	30	59.873	7.0262	- 71	30	55.69	2.563
α Lyræ (<i>Vega</i>)	0.2	18	33	27.085	2.0314	+ 38	41	15.61	3.189
β Lyræ (<i>var.</i>)	3.6	18	46	16.637	+ 2.2143	+ 33	14	34.54	+4.004
ϵ Sagittarii	2.3	18	48	52.719	+ 3.7212	- 26	25	28.63	4.168
50 Draconis	5.6	18	49	41.685	- 1.9122	+ 75	18	44.88	4.389
51 Cephei (H.) . S. P.	5.3	18	52	13.922	+29.7150	+ 92	47	25.87	4.568
σ Octantis	5.6	18	54	37.027	+103.6610	- 89	15	31.78	+4.716

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MEAN PLACES FOR 1897.0. (January 0 ^d .0—0 ^d .624, Washington.)					
Name of Star.	Magni- tude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		h m s	s	° ' "	"
* γ Lyrae	3.3	18 55 5.457	+ 2.2444	+ 32 32 53.87	+ 4.785
ζ Aquilæ	3.1	19 0 40.563	2.7569	+ 13 42 37.23	5.143
* ε Lyrae	5.2	19 3 37.614	2.1413	+ 35 56 19.42	5.505
* 25 Camelopardalis . S. P.	5.3	19 9 25.224	12.9215	+ 97 23 25.22	6.014
δ Sagittarii	5.0	19 11 36.510	3.5118	- 19 8 10.05	6.145
δ Draconis	3.1	19 12 31.939	+ 0.0277	+ 67 28 49.23	+ 6.327
* θ Lyrae	4.4	19 12 47.503	+ 2.0791	+ 37 57 0.50	6.263
τ Draconis	4.5	19 17 32.185	- 1.1214	+ 73 9 51.24	6.764
Piazzi vii, 67 . S. P.	5.7	19 20 10.055	+ 6.2921	+ 111 19 26.83	6.910
δ Aquilæ	3.5	19 20 18.304	+ 3.0251	+ 2 54 33.92	6.960
λ Ursæ Minoris	6.5	19 25 52.970	- 67.0115	+ 88 58 54.19	+ 7.348
* β Cygni	3.1	19 26 34.059	+ 2.4195	+ 27 44 35.82	7.387
* κ Aquilæ	5.0	19 31 21.005	3.2285	- 7 15 22.88	7.783
* γ Sagittæ	4.5	19 36 25.384	2.6955	+ 17 14 14.15	8.161
β Aquilæ	2.8	19 41 21.775	2.8521	+ 10 21 44.03	8.574
* δ Cygni	2.9	19 41 45.382	+ 1.8761	+ 44 52 45.22	+ 8.650
α Aquilæ (<i>Altair</i>)	0.9	19 45 45.480	2.9274	+ 8 35 46.41	9.300
* Groombridge 1374 S.P.	5.6	19 47 51.945	+ 7.2720	+ 105 48 25.89	9.127
* ε Draconis	3.9	19 48 31.188	- 0.1825	+ 70 0 20.22	9.172
* ε Pavonis	4.1	19 48 40.370	+ 7.0071	- 73 10 52.32	9.156
β Aquilæ	3.9	19 50 15.231	+ 2.9469	+ 6 8 57.88	+ 8.787
* γ Sagittæ	3.6	19 54 10.597	2.6678	+ 19 12 44.93	9.620
* ζ Sagittarii	4.5	19 56 19.534	3.6958	- 27 59 45.63	9.763
τ Aquilæ	5.7	19 59 6.561	2.9329	+ 6 59 13.94	9.966
3 Ursæ Majoris (H.) S.P.	5.5	20 2 34.141	6.0399	+ 111 13 22.77	10.218
* θ Aquilæ	3.3	20 5 59.400	+ 3.0969	- 1 7 37.40	+ 10.486
* 31 Cygni	3.9	20 10 23.311	1.8894	+ 46 25 43.91	10.806
α ² Capricorni	3.7	20 12 20.405	+ 3.3315	- 12 51 50.59	10.946
* κ Cephei (<i>pr.</i>)	4.4	20 12 21.448	- 1.9357	+ 77 24 4.48	10.976
α Pavonis	2.1	20 17 30.452	+ 4.7796	- 57 3 53.42	11.232
γ Cygni	2.3	20 18 32.013	+ 2.1539	+ 39 55 36.76	+ 11.389
π Capricorni	5.1	20 21 25.585	3.4387	- 18 32 57.74	11.586
* ε Delphini	4.0	20 28 17.561	+ 2.8671	+ 10 57 11.82	12.066
Groombridge 3241	6.5	20 30 27.102	- 0.2250	+ 72 10 57.88	12.219
* α Delphini	3.9	20 34 51.241	+ 2.7878	+ 15 32 55.08	12.544
* β Pavonis	3.4	20 35 40.737	+ 5.4653	- 66 34 22.82	+ 12.575
α Cygni	1.4	20 37 55.250	2.0445	+ 44 54 43.72	12.741
* ψ Capricorni	4.3	20 39 59.866	3.5595	- 25 38 27.58	12.727
* ε Cygni	2.6	20 42 2.633	2.4280	+ 33 35 3.51	13.360
μ Aquarii	4.8	20 47 5.931	+ 3.2391	- 9 22 11.54	13.315
12 Year Catalogue, 1879	5.3	20 52 15.718	- 2.5729	+ 80 9 57.54	+ 13.662
ν Cygni	4.1	20 53 19.974	+ 2.2344	+ 40 46 13.97	13.742
α ³ Ursæ Majoris . S. P.	5.0	21 1 19.958	5.3447	+ 112 26 50.33	14.317
61 ¹ Cygni	5.4	21 2 16.746	2.6835	+ 38 14 33.93	17.554
ζ Cygni	3.3	21 8 33.094	2.5499	+ 29 48 15.50	14.631
* τ Cygni	3.8	21 10 40.785	+ 2.3938	+ 37 36 20.66	+ 15.280
α Cephei	2.6	21 16 7.311	1.4360	+ 62 8 56.71	15.184
ι Pegasi	4.3	21 17 19.338	2.7724	+ 19 21 49.46	15.260
* ζ Capricorni	3.8	21 20 47.262	3.4332	- 22 51 27.23	15.408
ι Draconis (H.) . S. P.	4.5	21 22 24.538	+ 8.9402	+ 98 13 6.47	+ 15.514

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MEAN PLACES FOR 1897.0. (January 0^d.0—0^d.624, Washington.)

Name of Star.	Magni- tude.	Right Ascension.			Annual Variation.	Declination.			Annual Variation.
		h	m	s	s	°	'	"	"
α Ursæ Majoris . S. P.	4.8	21	25	22.482	+ 5.3882	+109	43	1.75	+15.598
β Aquarii	2.9	21	26	8.230	3.1612	- 6	1	27.71	15.684
β Cephei (<i>pr.</i>)	3.4	21	27	19.854	0.7915	+ 70	6	30.39	15.761
ξ Aquarii	4.8	21	32	16.175	3.1973	- 8	18	58.20	15.993
* 74 Cygni	5.0	21	32	49.224	2.4020	+ 39	57	2.07	16.068
* λ^1 Octantis	5.4	21	35	6.470	+ 9.7045	- 83	11	33.66	+16.099
* ζ Chamæleontis . S. P.	5.2	21	36	55.357	- 1.5843	- 99	31	17.05	16.276
ϵ Pegasi	2.4	21	39	7.652	+ 2.9467	+ 9	24	9.84	16.375
ι Cephei	4.8	21	40	24.932	0.8989	+ 70	50	13.84	16.544
* π^2 Cygni	4.5	21	42	59.275	2.2138	+ 48	49	58.60	16.557
μ Capricorni	5.2	21	47	40.857	+ 3.2752	- 14	2	12.04	+16.800
* 16 Pegasi	5.1	21	48	22.516	2.7282	+ 25	26	25.72	16.836
79 Draconis	6.6	21	51	34.727	0.7256	+ 73	12	54.16	17.017
α Aquarii	3.0	22	0	29.626	3.0824	- 0	49	12.99	17.373
α Gruis	1.9	22	1	44.520	3.8026	- 47	27	34.89	17.269
* π Pegasi	4.3	22	5	24.758	+ 2.6607	+ 32	40	22.47	+17.595
32 Ursæ Majoris . S. P.	5.7	22	10	33.359	4.4123	+114	22	41.06	17.834
θ Aquarii	4.4	22	11	23.933	3.1686	- 8	17	46.29	17.818
* υ Octantis	6.2	22	11	56.195	12.9162	- 86	29	26.69	17.955
* γ Aquarii	4.0	22	16	20.165	3.1005	- 1	54	23.01	18.054
π Aquarii	4.6	22	20	1.030	+ 3.0645	+ 0	51	16.93	+18.169
* σ Aquarii	4.9	22	25	11.761	3.1776	- 11	12	18.02	18.333
9 Draconis S. P.	5.0	22	26	21.027	5.2420	+103	45	23.74	18.418
* α Lacertæ	3.9	22	27	2.813	2.4635	+ 49	45	10.13	18.426
η Aquarii	4.2	22	30	3.816	3.0834	- 0	38	54.25	18.471
226 Cephei (B.)	5.7	22	30	28.068	+ 1.0748	+ 75	41	44.08	+18.533
* 10 Lacertæ	5.0	22	34	38.345	2.6876	+ 38	30	50.98	18.680
* β Octantis	4.4	22	35	31.693	6.4355	- 81	55	16.46	18.708
ζ Pegasi	3.5	22	36	19.504	2.9911	+ 10	17	37.21	18.718
* λ Pegasi	4.1	22	41	34.156	2.8858	+ 23	1	24.98	18.885
ι Cephei	3.6	22	46	0.660	+ 2.1235	+ 65	39	30.81	+18.884
λ Aquarii	3.8	22	47	14.499	3.1323	- 8	7	39.53	19.085
* Groombr. 1706 . S. P.	6.3	22	51	43.042	4.9458	+101	40	40.87	19.198
α Pis. Aust. (<i>Fomalhaut</i>). . . .	1.3	22	51	57.550	3.3232	- 30	10	5.32	19.004
* ϵ Andromedæ	3.8	22	57	10.850	2.7513	+ 41	46	20.04	19.295
α Ursæ Majoris . S. P.	2.0	22	57	22.350	+ 3.7414	+117	41	34.60	+19.375
α Pegasi (<i>Markab</i>)	2.5	22	59	37.792	2.9854	+ 14	39	3.58	19.310
* ϕ Aquarii	4.3	23	8	59.319	3.1084	- 6	36	15.15	19.365
ϵ Cephei	5.1	23	14	23.786	2.4471	+ 67	32	52.93	19.674
* τ Pegasi	4.6	23	15	32.292	2.9644	+ 23	10	34.98	19.662
θ Piscium	4.3	23	22	44.570	+ 3.0413	+ 5	48	46.96	+19.732
λ Draconis S. P.	4.0	23	25	17.316	3.6131	+110	6	1.75	19.844
* λ Andromedæ	3.8	23	32	31.329	2.9243	+ 45	53	59.31	19.476
ι Piscium	4.3	23	34	39.144	3.0844	+ 5	4	4.79	19.487
γ Cephei	3.5	23	35	6.894	2.4210	+ 77	3	26.51	20.078
* δ^1 Aquarii	5.2	23	38	51.617	+ 3.1162	- 18	50	54.72	+19.962
* δ Sculptoris	4.6	23	43	33.701	3.1313	- 28	41	58.91	19.858
* γ^1 Octantis	5.2	23	46	3.100	3.6649	- 82	35	28.63	19.995
Groombridge 4163	6.6	23	49	49.291	2.8720	+ 73	50	13.53	20.023
ω Piscium	4.2	23	54	1.322	3.0788	+ 6	17	34.94	19.931
* 33 Piscium	4.7	24	0	3.807	+ 3.0708	- 6	17	1.11	+20.147

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (Polaris.)		Mean Solar Date.	γ Cephei (Hrv.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
Jan.	h m	°	Jan.	h m	°	Jan.	h m	°	Jan.	h m	°
	1 20	+88 45		6 52	+87 12		18 5	+86 36		19 24	+88 58
0.3	78.23	57.0	0.5	50.86	38.0	0.9	3.70	36.8	0.0	13.60	54.2
1.3	77.42	57.2	1.5	51.03	38.3	1.9	3.71	36.4	1.0	13.07	53.9
2.3	76.53	57.3	2.5	51.21	38.6	2.9	3.68	36.1	2.0	12.55	53.6
3.3	75.59	57.4	3.5	51.35	38.9	3.9	3.67	35.7	3.0	12.00	53.3
4.3	74.60	57.6	4.5	51.49	39.2	4.9	3.68	35.4	4.0	11.49	53.0
5.3	73.54	57.7	5.5	51.59	39.6	5.9	3.71	35.0	5.0	11.04	52.7
6.3	72.46	57.7	6.5	51.65	39.9	6.9	3.77	34.6	6.0	10.66	52.3
7.3	71.38	57.8	7.5	51.68	40.3	7.9	3.85	34.3	7.0	10.38	52.0
8.3	70.32	57.9	8.5	51.68	40.6	8.9	3.95	33.9	8.0	10.19	51.6
9.3	69.31	57.9	9.5	51.67	40.9	9.9	4.04	33.6	9.0	10.06	51.3
10.2	68.34	57.9	10.5	51.65	41.2	10.9	4.15	33.3	10.0	9.97	51.0
11.2	67.43	57.9	11.5	51.63	41.5	11.9	4.23	33.0	10.9	9.90	50.7
12.2	66.55	57.9	12.5	51.62	41.8	12.9	4.31	32.8	11.9	9.83	50.4
13.2	65.69	58.0	13.5	51.64	42.1	13.9	4.39	32.5	12.9	9.71	50.1
14.2	64.82	58.0	14.5	51.66	42.4	14.9	4.45	32.2	13.9	9.57	49.8
15.2	63.92	58.1	15.5	51.71	42.6	15.9	4.53	31.9	14.9	9.40	49.5
16.2	62.99	58.1	16.5	51.75	43.0	16.9	4.60	31.5	15.9	9.20	49.2
17.2	61.97	58.2	17.5	51.76	43.3	17.9	4.69	31.2	16.9	9.00	48.9
18.2	60.92	58.2	18.5	51.76	43.6	18.9	4.80	30.8	17.9	8.83	48.5
19.2	59.83	58.2	19.5	51.73	44.0	19.9	4.94	30.5	18.9	8.74	48.2
20.2	58.74	58.2	20.4	51.68	44.3	20.9	5.10	30.2	19.9	8.72	47.8
21.2	57.66	58.2	21.4	51.57	44.7	21.9	5.28	29.8	20.9	8.78	47.5
22.2	56.61	58.1	22.4	51.46	45.0	22.9	5.46	29.5	21.9	8.91	47.1
23.2	55.61	58.0	23.4	51.33	45.3	23.9	5.65	29.2	22.9	9.10	46.8
24.2	54.68	58.0	24.4	51.21	45.6	24.9	5.83	29.0	23.9	9.33	46.5
25.2	53.81	57.9	25.4	51.08	45.8	25.9	5.99	28.7	24.9	9.56	46.2
26.2	52.97	57.9	26.4	50.97	46.1	26.9	6.16	28.5	25.9	9.77	45.9
27.2	52.13	57.8	27.4	50.89	46.4	27.9	6.32	28.2	26.9	9.94	45.6
28.2	51.29	57.8	28.4	50.81	46.6	28.9	6.47	28.0	27.9	10.08	45.3
29.2	50.40	57.7	29.4	50.73	46.9	29.9	6.64	27.7	28.9	10.21	45.1
30.2	49.48	57.7	30.4	50.65	47.2	30.9	6.81	27.4	29.9	10.33	44.8
31.2	48.50	57.7	31.4	50.54	47.5	31.9	7.00	27.1	30.9	10.46	44.4
32.2	47.50	57.6	32.4	50.41	47.8	32.9	7.21	26.8	31.9	10.66	44.1

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (Polaris.)		Mean Solar Date.	γ Cephei (Hrv.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
Feb.	^h ^m 1 20	+88 45	Feb.	^h ^m 6 52	+87 12	Feb.	^h ^m 18 5	+86 36	Feb.	^h ^m 19 24	+88 58
	^s	^s		^s	^s		^s	^s		^s	^s
1.2	47.50	57.6	1.4	50.41	47.8	1.9	7.21	26.8	1.9	10.92	43.8
2.2	46.46	57.5	2.4	50.25	48.2	2.9	7.44	26.5	2.9	11.27	43.4
3.2	45.42	57.4	3.4	50.04	48.5	3.9	7.69	26.2	3.9	11.71	43.1
4.2	44.40	57.3	4.4	49.83	48.8	4.9	7.95	26.0	4.9	12.21	42.8
5.2	43.44	57.1	5.4	49.56	49.1	5.9	8.24	25.7	5.9	12.78	42.5
6.2	42.53	57.0	6.4	49.30	49.3	6.9	8.53	25.5	6.9	13.37	42.2
7.2	41.70	56.8	7.4	49.04	49.6	7.9	8.80	25.3	7.9	13.98	41.9
8.2	40.90	56.7	8.4	48.79	49.8	8.9	9.06	25.1	8.9	14.54	41.7
9.2	40.13	56.5	9.4	48.56	50.0	9.9	9.30	24.9	9.9	15.07	41.4
10.2	39.39	56.4	10.4	48.36	50.2	10.9	9.55	24.7	10.9	15.54	41.2
11.2	38.63	56.2	11.4	48.15	50.5	11.9	9.77	24.5	11.9	16.01	40.9
12.2	37.83	56.1	12.4	47.96	50.7	12.9	10.02	24.3	12.9	16.45	40.6
13.2	37.00	56.0	13.4	47.76	50.9	13.9	10.27	24.1	13.9	16.93	40.3
14.2	36.11	55.9	14.4	47.54	51.2	14.9	10.54	23.8	14.9	17.44	40.0
15.1	35.21	55.7	15.4	47.29	51.5	15.9	10.81	23.6	15.9	18.01	39.7
16.1	34.28	55.5	16.4	47.03	51.8	16.8	11.11	23.4	16.9	18.67	39.4
17.1	33.39	55.4	17.4	46.72	52.0	17.8	11.44	23.2	17.9	19.39	39.1
18.1	32.51	55.2	18.4	46.40	52.3	18.8	11.77	23.0	18.9	20.18	38.9
19.1	31.70	54.9	19.4	46.06	52.5	19.8	12.10	22.8	19.9	21.00	38.6
20.1	30.96	54.7	20.4	45.72	52.7	20.8	12.42	22.6	20.9	21.84	38.4
21.1	30.28	54.5	21.4	45.37	52.9	21.8	12.74	22.5	21.9	22.67	38.2
22.1	29.66	54.3	22.4	45.06	53.1	22.8	13.05	22.4	22.9	23.45	38.0
23.1	29.07	54.1	23.4	44.74	53.2	23.8	13.35	22.3	23.9	24.19	37.8
24.1	28.50	53.8	24.3	44.48	53.4	24.8	13.63	22.2	24.9	24.89	37.6
25.1	27.90	53.7	25.3	44.21	53.6	25.8	13.91	22.0	25.9	25.58	37.4
26.1	27.26	53.5	26.3	43.93	53.7	26.8	14.20	21.9	26.9	26.27	37.2
27.1	26.59	53.3	27.3	43.65	53.9	27.8	14.49	21.7	27.9	26.98	36.9
28.1	25.87	53.1	28.3	43.34	54.1	28.8	14.82	21.6	28.9	27.77	36.7
29.1	25.13	52.9	29.3	43.00	54.4	29.8	15.17	21.4	29.9	28.63	36.5

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (Polaris.)		Mean Solar Date.	γ Cephei (Hæv.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
Mar.	h m 1 20	+88 45	Mar.	h m 6 52	+87 12	Mar.	h m 18 5	+86 36	Mar.	h m 19 24	+88 58
	"	"		"	"		"	"		"	"
1.1	25.13	52.9	1.3	43.00	54.4	1.8	15.17	21.4	1.9	28.63	36.5
2.1	24.39	52.6	2.3	42.63	54.6	2.8	15.53	21.2	2.9	29.56	36.2
3.1	23.68	52.4	3.3	42.23	54.8	3.8	15.90	21.1	3.9	30.57	36.0
4.1	23.02	52.1	4.3	41.82	54.9	4.8	16.28	21.0	4.9	31.64	35.8
5.1	22.41	51.8	5.3	41.38	55.1	5.8	16.67	21.0	5.9	32.73	35.6
6.1	21.89	51.5	6.3	40.96	55.2	6.8	17.04	20.9	6.9	33.81	35.4
7.1	21.42	51.2	7.3	40.54	55.3	7.8	17.40	20.9	7.9	34.89	35.3
8.1	21.01	50.9	8.3	40.14	55.4	8.8	17.74	20.8	8.9	35.92	35.1
9.1	20.62	50.7	9.3	39.76	55.5	9.8	18.08	20.8	9.8	36.91	35.0
10.1	20.23	50.4	10.3	39.41	55.6	10.8	18.41	20.7	10.8	37.84	34.9
11.1	19.84	50.2	11.3	39.06	55.7	11.8	18.73	20.7	11.8	38.75	34.7
12.1	19.46	49.9	12.3	38.73	55.8	12.8	19.05	20.6	12.8	39.65	34.6
13.1	18.94	49.7	13.3	38.38	55.9	13.8	19.39	20.5	13.8	40.58	34.4
14.1	18.44	49.4	14.3	38.01	56.1	14.8	19.74	20.5	14.8	41.56	34.2
15.1	17.93	49.2	15.3	37.61	56.2	15.8	20.10	20.4	15.8	42.60	34.0
16.1	17.44	48.9	16.3	37.18	56.3	16.8	20.48	20.3	16.8	43.72	33.9
17.1	16.97	48.6	17.3	36.75	56.4	17.8	20.87	20.3	17.8	44.87	33.7
18.1	16.57	48.3	18.3	36.30	56.5	18.8	21.27	20.3	18.8	46.07	33.6
19.1	16.24	47.9	19.3	35.83	56.6	19.8	21.65	20.3	19.8	47.29	33.5
20.1	15.97	47.6	20.3	35.39	56.6	20.8	22.01	20.4	20.8	48.48	33.4
21.1	15.78	47.3	21.3	34.95	56.6	21.8	22.37	20.4	21.8	49.64	33.4
22.0	15.63	47.0	22.3	34.55	56.7	22.7	22.72	20.5	22.8	50.74	33.3
23.0	15.50	46.7	23.3	34.17	56.7	23.7	23.03	20.5	23.8	51.79	33.3
24.0	15.38	46.4	24.3	33.80	56.7	24.7	23.36	20.6	24.8	52.81	33.2
25.0	15.22	46.2	25.3	33.44	56.7	25.7	23.67	20.6	25.8	53.80	33.2
26.0	15.03	45.9	26.3	33.08	56.8	26.7	23.99	20.6	26.8	54.79	33.1
27.0	14.81	45.6	27.3	32.71	56.8	27.7	24.32	20.6	27.8	55.84	33.0
28.0	14.55	45.3	28.3	32.32	56.8	28.7	24.68	20.6	28.8	56.93	32.9
29.0	14.30	45.0	29.3	31.89	56.9	29.7	25.05	20.6	29.8	58.09	32.8
30.0	14.05	44.7	30.3	31.43	56.9	30.7	25.42	20.7	30.8	59.32	32.7
31.0	13.84	44.4	31.3	30.97	57.0	31.7	25.81	20.7	31.8	60.61	32.7
32.0	13.72	44.1	32.2	30.48	57.0	32.7	26.20	20.8	32.8	61.92	32.6

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (Polaris.)		Mean Solar Date.	γ Cephei (Hrv.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
Apr.	^h ^m 1 20	+88 45	Apr.	^h ^m 6 52	+87 12	Apr.	^h ^m 18 5	+86 36	Apr.	^h ^m 19 24	+88 58
	^s	"		^s	"		^s	"		^s	"
1.0	13.72	44.1	1.2	30.48	57.0	1.7	26.20	20.8	1.8	1.92	32.6
2.0	13.64	43.7	2.2	30.01	56.9	2.7	26.57	20.9	2.8	3.21	32.6
3.0	13.66	43.3	3.2	29.54	56.9	3.7	26.94	21.1	3.8	4.49	32.6
4.0	13.72	43.0	4.2	29.09	56.8	4.7	27.28	21.2	4.8	5.72	32.7
5.0	13.82	42.7	5.2	28.67	56.7	5.7	27.60	21.3	5.8	6.89	32.7
6.0	13.95	42.4	6.2	28.27	56.7	6.7	27.92	21.5	6.8	7.99	32.7
7.0	14.06	42.1	7.2	27.89	56.6	7.7	28.23	21.6	7.8	9.06	32.8
8.0	14.15	41.8	8.2	27.54	56.6	8.7	28.52	21.7	8.8	10.10	32.8
9.0	14.20	41.5	9.2	27.18	56.5	9.7	28.82	21.8	9.8	11.15	32.8
10.0	14.23	41.3	10.2	26.80	56.5	10.7	29.15	21.9	10.8	12.21	32.8
10.9	14.23	41.0	11.2	26.41	56.4	11.7	29.47	22.0	11.8	13.34	32.8
11.9	14.24	40.7	12.2	25.99	56.4	12.7	29.80	22.1	12.8	14.50	32.8
12.9	14.28	40.4	13.2	25.58	56.4	13.7	30.14	22.2	13.8	15.73	32.8
13.9	14.36	40.0	14.2	25.13	56.3	14.7	30.49	22.4	14.8	16.98	32.8
14.9	14.51	39.7	15.2	24.69	56.2	15.7	30.83	22.5	15.8	18.23	32.9
15.9	14.75	39.4	16.2	24.27	56.1	16.7	31.17	22.7	16.8	19.47	33.0
16.9	15.03	39.0	17.2	23.85	56.0	17.7	31.47	22.9	17.7	20.67	33.1
17.9	15.39	38.7	18.2	23.45	55.8	18.7	31.75	23.2	18.7	21.81	33.2
18.9	15.77	38.4	19.2	23.09	55.7	19.7	32.02	23.4	19.7	22.88	33.3
19.9	16.16	38.2	20.2	22.75	55.5	20.7	32.27	23.6	20.7	23.89	33.4
20.9	16.54	37.9	21.2	22.44	55.4	21.7	32.52	23.8	21.7	24.87	33.5
21.9	16.88	37.7	22.2	22.11	55.2	22.7	32.77	23.9	22.7	25.83	33.6
22.9	17.17	37.4	23.2	21.80	55.1	23.7	33.01	24.1	23.7	26.80	33.7
23.9	17.45	37.2	24.2	21.47	55.0	24.7	33.29	24.3	24.7	27.81	33.8
24.9	17.69	36.9	25.2	21.10	54.9	25.7	33.57	24.5	25.7	28.87	33.8
25.9	17.94	36.6	26.2	20.74	54.8	26.7	33.86	24.6	26.7	30.00	33.9
26.9	18.23	36.3	27.2	20.33	54.6	27.7	34.16	24.8	27.7	31.16	34.0
27.9	18.58	36.0	28.2	19.92	54.5	28.7	34.44	25.0	28.7	32.37	34.2
28.9	18.98	35.7	29.2	19.51	54.3	29.6	34.73	25.3	29.7	33.56	34.3
29.9	19.47	35.4	30.2	19.11	54.1	30.6	35.01	25.6	30.7	34.73	34.5
30.9	20.01	35.1	31.2	18.74	53.9	31.6	35.26	25.8	31.7	35.86	34.6
31.9	20.59	34.8									

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (Polaris.)		Mean Solar Date.	γ Cephei (Hzv.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination North.		Right Ascension.	Declination North.		Right Ascension.	Declination North.		Right Ascension.	Declination North.
May	^h ^m 1 20	+88 45	May	^h ^m 6 52	+87 12	May	^h ^m 18 5	+86 36	May	^h ^m 19 25	+88 58
	^s	"		^s	"		^s	"		^s	"
1.9	20.59	34.8	1.2	18.74	53.9	1.6	35.26	25.8	1.7	35.86	34.6
2.9	21.21	34.5	2.2	18.39	53.7	2.6	35.50	26.1	2.7	36.91	34.8
3.9	21.81	34.3	3.2	18.07	53.5	3.6	35.70	26.4	3.7	37.89	35.0
4.9	22.41	34.0	4.2	17.79	53.3	4.6	35.91	26.6	4.7	38.79	35.2
5.9	22.95	33.8	5.2	17.52	53.0	5.6	36.09	26.9	5.7	39.66	35.4
6.9	23.47	33.6	6.2	17.27	52.9	6.6	36.28	27.1	6.7	40.50	35.6
7.9	23.96	33.4	7.1	17.00	52.7	7.6	36.48	27.4	7.7	41.37	35.7
8.9	24.43	33.2	8.1	16.74	52.5	8.6	36.69	27.6	8.7	42.25	35.8
9.9	24.92	32.9	9.1	16.44	52.3	9.6	36.89	27.8	9.7	43.18	36.0
10.9	25.45	32.6	10.1	16.13	52.2	10.6	37.11	28.0	10.7	44.18	36.2
11.9	26.03	32.4	11.1	15.81	51.9	11.6	37.34	28.3	11.7	45.16	36.3
12.9	26.68	32.1	12.1	15.50	51.7	12.6	37.55	28.6	12.7	46.17	36.5
13.9	27.39	31.9	13.1	15.17	51.5	13.6	37.75	28.9	13.7	47.16	36.7
14.9	28.18	31.6	14.1	14.88	51.2	14.6	37.93	29.2	14.7	48.11	37.0
15.9	28.98	31.4	15.1	14.62	51.0	15.6	38.10	29.5	15.7	48.98	37.2
16.9	29.80	31.2	16.1	14.38	50.7	16.6	38.23	29.9	16.7	49.79	37.5
17.9	30.61	31.0	17.1	14.17	50.4	17.6	38.33	30.2	17.6	50.54	37.7
18.9	31.39	30.8	18.1	13.98	50.1	18.6	38.45	30.5	18.6	51.22	38.0
19.9	32.13	30.7	19.1	13.81	49.9	19.6	38.56	30.8	19.6	51.85	38.2
20.9	32.83	30.5	20.1	13.65	49.6	20.6	38.68	31.0	20.6	52.49	38.5
21.9	33.49	30.4	21.1	13.46	49.4	21.6	38.78	31.3	21.6	53.15	38.7
22.9	34.15	30.2	22.1	13.28	49.2	22.6	38.92	31.6	22.6	53.85	38.9
23.9	34.83	30.0	23.1	13.07	49.0	23.6	39.06	31.8	23.6	54.59	39.1
24.9	35.53	29.8	24.1	12.82	48.7	24.6	39.20	32.1	24.6	55.38	39.3
25.9	36.31	29.6	25.1	12.59	48.5	25.6	39.35	32.4	25.6	56.22	39.6
26.9	37.14	29.3	26.1	12.34	48.2	26.6	39.49	32.7	26.6	57.05	39.8
27.9	38.04	29.1	27.1	12.10	47.9	27.6	39.63	33.1	27.6	57.84	40.1
28.9	38.98	29.0	28.1	11.89	47.6	28.6	39.74	33.4	28.6	58.59	40.4
29.9	39.94	28.8	29.1	11.70	47.3	29.6	39.81	33.8	29.6	59.28	40.7
30.9	40.90	28.7	30.1	11.55	46.9	30.6	39.88	34.1	30.6	59.88	41.0
31.9	41.86	28.5	31.1	11.42	46.6	31.6	39.92	34.5	31.6	60.41	41.3
32.9	42.77	28.4	32.1	11.33	46.3	32.6	39.96	34.8	32.6	60.87	41.6

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (Polaris.)		Mean Solar Date.	51 Cephei (Hrv.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
June	h m 1 20	+88 45	June	h m 6 52	+87 12	June	h m 18 5	+86 36	June	h m 19 26	+88 58
	s	"		s	"		s	"		s	"
1.9	42.77	28.4	1.1	11.33	46.3	1.6	39.96	34.8	1.6	0.87	41.6
2.9	43.62	28.3	2.1	11.25	46.0	2.6	39.97	35.1	2.6	1.29	41.9
3.8	44.44	28.2	3.1	11.18	45.7	3.5	40.00	35.4	3.6	1.72	42.2
4.8	45.23	28.1	4.1	11.07	45.4	4.5	40.05	35.7	4.6	2.15	42.4
5.8	46.00	28.0	5.1	10.97	45.2	5.5	40.08	36.0	5.6	2.62	42.7
6.8	46.84	27.9	6.1	10.86	44.9	6.5	40.13	36.3	6.6	3.12	43.0
7.8	47.71	27.7	7.1	10.73	44.6	7.5	40.18	36.6	7.6	3.66	43.2
8.8	48.62	27.6	8.1	10.60	44.4	8.5	40.24	36.9	8.6	4.21	43.5
9.8	49.61	27.5	9.1	10.48	44.0	9.5	40.27	37.2	9.6	4.75	43.8
10.8	50.65	27.4	10.1	10.36	43.7	10.5	40.29	37.6	10.6	5.24	44.1
11.8	51.72	27.3	11.1	10.27	43.4	11.5	40.29	38.0	11.6	5.68	44.5
12.8	52.82	27.2	12.1	10.22	43.0	12.5	40.26	38.3	12.6	6.03	44.8
13.8	53.90	27.1	13.0	10.21	42.7	13.5	40.22	38.7	13.6	6.31	45.2
14.8	54.96	27.1	14.0	10.22	42.4	14.5	40.15	39.0	14.6	6.50	45.5
15.8	55.94	27.1	15.0	10.23	42.0	15.5	40.09	39.4	15.6	6.67	45.8
16.8	56.89	27.1	16.0	10.27	41.7	16.5	40.02	39.7	16.6	6.80	46.2
17.8	57.82	27.0	17.0	10.31	41.4	17.5	39.95	40.0	17.6	6.94	46.5
18.8	58.70	27.0	18.0	10.33	41.2	18.5	39.89	40.2	18.6	7.12	46.7
19.8	59.58	27.0	19.0	10.33	40.9	19.5	39.86	40.5	19.6	7.32	47.0
20.8	60.49	26.9	20.0	10.31	40.6	20.5	39.83	40.8	20.6	7.58	47.3
21.8	61.43	26.8	21.0	10.27	40.3	21.5	39.78	41.2	21.6	7.86	47.6
22.8	62.45	26.8	22.0	10.23	40.0	22.5	39.75	41.5	22.6	8.18	47.9
23.8	63.51	26.7	23.0	10.20	39.7	23.5	39.71	41.8	23.6	8.44	48.3
24.8	64.61	26.6	24.0	10.18	39.3	24.5	39.66	42.2	24.6	8.69	48.6
25.8	65.74	26.6	25.0	10.19	39.0	25.5	39.57	42.5	25.6	8.87	49.0
26.8	66.87	26.6	26.0	10.23	38.6	26.5	39.46	42.9	26.6	8.96	49.4
27.8	68.01	26.6	27.0	10.31	38.2	27.5	39.34	43.3	27.6	8.97	49.7
28.8	69.09	26.7	28.0	10.40	37.9	28.5	39.20	43.6	28.6	8.91	50.1
29.8	70.12	26.7	29.0	10.53	37.6	29.5	39.06	43.9	29.5	8.81	50.4
30.8	71.09	26.8	30.0	10.66	37.2	30.5	38.90	44.2	30.5	8.67	50.8
31.8	72.04	26.8	31.0	10.79	36.9	31.5	38.76	44.5	31.5	8.55	51.1

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (Polaris.)		Mean Solar Date.	γ Cephei (Hæv.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
July	h m 1 21	+88 45	July	h m 6 52	+87 12	July	h m 18 5	+86 36	July	h m 19 25	+88 58
	s	"		s	"		s	"		s	"
1.8	12.04	26.8	1.0	10.79	36.9	1.5	38.76	44.5	1.5	68.55	51.1
2.8	12.96	26.8	2.0	10.90	36.7	2.5	38.62	44.8	2.5	68.46	51.4
3.8	13.88	26.9	3.0	11.01	36.4	3.5	38.49	45.0	3.5	68.38	51.7
4.8	14.84	26.9	4.0	11.08	36.1	4.5	38.37	45.3	4.5	68.37	52.0
5.8	15.84	26.9	4.9	11.16	35.8	5.5	38.25	45.6	5.5	68.34	52.3
6.8	16.90	26.9	5.9	11.24	35.5	6.5	38.13	46.0	6.5	68.33	52.6
7.8	18.01	27.0	6.9	11.34	35.2	7.5	37.98	46.3	7.5	68.29	53.0
8.8	19.15	27.0	7.9	11.44	34.8	8.5	37.81	46.6	8.5	68.19	53.4
9.8	20.32	27.1	8.9	11.59	34.5	9.5	37.63	47.0	9.5	68.01	53.7
10.7	21.49	27.2	9.9	11.74	34.1	10.5	37.42	47.3	10.5	67.76	54.1
11.7	22.61	27.3	10.9	11.96	33.7	11.5	37.20	47.6	11.5	67.43	54.5
12.7	23.69	27.4	11.9	12.19	33.4	12.4	36.96	47.9	12.5	67.05	54.8
13.7	24.71	27.5	12.9	12.41	33.1	13.4	36.73	48.2	13.5	66.63	55.2
14.7	25.68	27.6	13.9	12.66	32.8	14.4	36.50	48.5	14.5	66.19	55.5
15.7	26.60	27.8	14.9	12.90	32.5	15.4	36.27	48.7	15.5	65.79	55.8
16.7	27.51	27.8	15.9	13.10	32.2	16.4	36.05	49.0	16.5	65.42	56.1
17.7	28.43	27.9	16.9	13.30	32.0	17.4	35.86	49.2	17.5	65.09	56.4
18.7	29.38	28.0	17.9	13.48	31.7	18.4	35.67	49.5	18.5	64.81	56.7
19.7	30.37	28.1	18.9	13.64	31.4	19.4	35.46	49.8	19.5	64.54	57.0
20.7	31.42	28.2	19.9	13.81	31.1	20.4	35.27	50.1	20.5	64.28	57.4
21.7	32.51	28.3	20.9	13.99	30.8	21.4	35.05	50.4	21.5	63.96	57.7
22.7	33.63	28.4	21.9	14.20	30.4	22.4	34.82	50.7	22.5	63.61	58.1
23.7	34.75	28.5	22.9	14.43	30.1	23.4	34.55	51.0	23.5	63.18	58.4
24.7	35.86	28.7	23.9	14.68	29.8	24.4	34.29	51.3	24.5	62.68	58.8
25.7	36.94	28.9	24.9	14.97	29.4	25.4	33.99	51.6	25.5	62.09	59.2
26.7	37.97	29.1	25.9	15.29	29.1	26.4	33.69	51.9	26.5	61.45	59.5
27.7	38.91	29.3	26.9	15.61	28.8	27.4	33.39	52.1	27.5	60.78	59.8
28.7	39.81	29.4	27.9	15.94	28.6	28.4	33.09	52.3	28.5	60.09	60.1
29.7	40.69	29.6	28.9	16.25	28.3	29.4	32.80	52.5	29.5	59.44	60.4
30.7	41.55	29.8	29.9	16.53	28.0	30.4	32.53	52.7	30.5	58.81	60.7
31.7	42.41	30.0	30.9	16.82	27.8	31.4	32.25	53.0	31.5	58.23	61.0
32.7	43.32	30.1	31.9	17.08	27.6	32.4	31.98	53.2	32.5	57.68	61.3

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (Polaris.)		Mean Solar Date.	γ Cephei (Hæv.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
Aug.	^h ^m 1 21	+88 45	Aug.	^h ^m 6 52	+87 12	Aug.	^h ^m 18 5	+86 36	Aug.	^h ^m 19 25	+88 59
	^s	"		^s	"		^s	"		^s	"
1.7	43.32	30.1	1.9	17.35	27.3	1.4	31.98	53.2	1.5	57.68	1.3
2.7	44.28	30.3	2.9	17.60	27.0	2.4	31.71	53.4	2.4	57.12	1.6
3.7	45.28	30.4	3.9	17.89	26.7	3.4	31.43	53.7	3.4	56.56	1.9
4.7	46.33	30.6	4.9	18.20	26.4	4.4	31.13	54.0	4.4	55.95	2.2
5.7	47.38	30.8	5.9	18.54	26.1	5.4	30.81	54.2	5.4	55.27	2.6
6.7	48.45	31.0	6.9	18.91	25.8	6.4	30.48	54.5	6.4	54.52	2.9
7.7	49.49	31.3	7.9	19.32	25.5	7.4	30.11	54.8	7.4	53.69	3.3
8.7	50.48	31.5	8.9	19.73	25.2	8.4	29.75	55.0	8.4	52.80	3.6
9.7	51.40	31.8	9.9	20.14	25.0	9.4	29.37	55.2	9.4	51.88	3.9
10.7	52.26	32.0	10.9	20.57	24.7	10.4	29.01	55.4	10.4	50.92	4.2
11.7	53.07	32.3	11.9	20.96	24.5	11.4	28.64	55.5	11.4	49.98	4.5
12.7	53.86	32.6	12.9	21.33	24.3	12.4	28.29	55.7	12.4	49.08	4.8
13.7	54.63	32.8	13.9	21.69	24.1	13.4	27.97	55.9	13.4	48.24	5.0
14.7	55.41	33.0	14.9	22.03	23.9	14.4	27.65	56.0	14.4	47.43	5.3
15.6	56.23	33.2	15.9	22.37	23.6	15.4	27.33	56.2	15.4	46.66	5.5
16.6	57.09	33.4	16.9	22.70	23.4	16.3	27.01	56.4	16.4	45.91	5.8
17.6	58.01	33.6	17.9	23.06	23.1	17.3	26.68	56.6	17.4	45.11	6.1
18.6	58.95	33.8	18.9	23.43	22.9	18.3	26.33	56.8	18.4	44.30	6.4
19.6	59.91	34.1	19.9	23.83	22.6	19.3	25.97	57.0	19.4	43.40	6.7
20.6	60.83	34.4	20.9	24.27	22.3	20.3	25.58	57.2	20.4	42.45	7.0
21.6	61.74	34.7	21.9	24.72	22.1	21.3	25.19	57.4	21.4	41.41	7.3
22.6	62.59	34.9	22.9	25.20	21.9	22.3	24.79	57.6	22.4	40.31	7.6
23.6	63.37	35.3	23.9	25.67	21.7	23.3	24.37	57.8	23.4	39.18	7.9
24.6	64.11	35.6	24.9	26.14	21.5	24.3	23.95	57.9	24.4	38.04	8.1
25.6	64.76	35.9	25.9	26.58	21.3	25.3	23.55	58.0	25.4	36.90	8.3
26.6	65.42	36.2	26.9	27.01	21.2	26.3	23.18	58.1	26.4	35.81	8.6
27.6	66.07	36.4	27.9	27.42	21.0	27.3	22.79	58.2	27.4	34.75	8.8
28.6	66.74	36.7	28.9	27.84	20.8	28.3	22.42	58.3	28.4	33.74	9.0
29.6	67.44	37.0	29.9	28.23	20.6	29.3	22.07	58.5	29.4	32.74	9.2
30.6	68.20	37.2	30.9	28.65	20.4	30.3	21.69	58.6	30.4	31.75	9.4
31.6	68.99	37.5	31.9	29.09	20.2	31.3	21.31	58.8	31.4	30.73	9.7
32.6	69.81	37.8	32.9	29.55	20.0	32.3	20.91	58.9	32.4	29.66	10.0

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (Polaris.)		Mean Solar Date.	γ Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
Sept.	h m 1 22	+88 45	Sept.	h m 6 52	+87 12	Sept.	h m 18 5	+86 36	Sept.	h m 19 24	+88 59
	s	"		s	"		s	"		s	"
1.6	9.81	37.8	1.9	29.55	20.0	1.3	20.91	58.9	1.4	89.66	10.0
2.6	10.62	38.1	2.8	30.03	19.8	2.3	20.48	59.1	2.4	88.52	10.2
3.6	11.43	38.5	3.8	30.55	19.5	3.3	20.05	59.2	3.4	87.30	10.5
4.6	12.19	38.8	4.8	31.09	19.3	4.3	19.61	59.3	4.4	86.03	10.8
5.6	12.89	39.2	5.8	31.62	19.2	5.3	19.15	59.4	5.4	84.69	11.0
6.6	13.51	39.6	6.8	32.17	19.0	6.3	18.70	59.5	6.4	83.35	11.2
7.6	14.08	39.9	7.8	32.70	18.9	7.3	18.26	59.6	7.4	82.00	11.4
8.6	14.59	40.3	8.8	33.19	18.8	8.3	17.82	59.6	8.4	80.70	11.6
9.6	15.09	40.6	9.8	33.67	18.7	9.3	17.41	59.7	9.4	79.45	11.7
10.6	15.59	40.9	10.8	34.13	18.6	10.3	17.02	59.7	10.3	78.25	11.9
11.6	16.11	41.2	11.8	34.55	18.5	11.3	16.63	59.8	11.3	77.09	12.1
12.6	16.66	41.5	12.8	35.01	18.3	12.3	16.24	59.8	12.3	75.97	12.2
13.6	17.27	41.8	13.8	35.46	18.2	13.3	15.84	59.9	13.3	74.84	12.4
14.6	17.90	42.1	14.8	35.92	18.0	14.3	15.44	60.0	14.3	73.69	12.6
15.6	18.56	42.5	15.8	36.42	17.8	15.3	15.03	60.1	15.3	72.48	12.8
16.6	19.20	42.8	16.8	36.94	17.7	16.3	14.59	60.2	16.3	71.22	13.1
17.6	19.81	43.2	17.8	37.48	17.5	17.3	14.14	60.2	17.3	69.87	13.3
18.6	20.38	43.6	18.8	38.04	17.4	18.3	13.67	60.3	18.3	68.48	13.5
19.6	20.87	44.0	19.8	38.61	17.3	19.3	13.22	60.3	19.3	67.03	13.7
20.6	21.31	44.4	20.8	39.17	17.2	20.3	12.76	60.3	20.3	65.58	13.8
21.5	21.67	44.7	21.8	39.71	17.2	21.3	12.31	60.3	21.3	64.13	13.9
22.5	22.00	45.1	22.8	40.23	17.1	22.2	11.88	60.3	22.3	62.73	14.0
23.5	22.33	45.4	23.8	40.72	17.1	23.2	11.46	60.3	23.3	61.37	14.2
24.5	22.66	45.8	24.8	41.20	17.0	24.2	11.04	60.2	24.3	60.05	14.3
25.5	23.02	46.1	25.8	41.69	16.9	25.2	10.64	60.2	25.3	58.79	14.4
26.5	23.42	46.5	26.8	42.17	16.8	26.2	10.24	60.2	26.3	57.52	14.5
27.5	23.85	46.8	27.8	42.66	16.7	27.2	9.84	60.2	27.3	56.25	14.6
28.5	24.31	47.2	28.8	43.18	16.6	28.2	9.41	60.3	28.3	54.94	14.8
29.5	24.79	47.5	29.8	43.72	16.5	29.2	8.96	60.3	29.3	53.57	14.9
30.5	25.25	47.9	30.8	44.29	16.4	30.2	8.51	60.3	30.3	52.13	15.1
31.5	25.67	48.3	31.7	44.89	16.4	31.2	8.03	60.3	31.3	50.65	15.2

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (Polaris.)		Mean Solar Date.	51 Cephei (Hrv.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination North.		Right Ascension.	Declination North.		Right Ascension.	Declination North.		Right Ascension.	Declination North.
Oct.	^h ^m 1 22	+88° 45'	Oct.	^h ^m 6 52	+87° 12'	Oct.	^h ^m 18 4	+86° 36'	Oct.	^h ^m 19 24	+88° 59'
	^s	"		^s	"		^s	"		^s	"
1.5	25.67	48.3	1.7	44.89	16.4	1.2	68.03	60.3	1.3	50.65	15.2
2.5	26.03	48.7	2.7	45.47	16.3	2.2	67.57	60.3	2.3	49.10	15.3
3.5	26.32	49.2	3.7	46.06	16.3	3.2	67.09	60.2	3.3	47.54	15.4
4.5	26.55	49.6	4.7	46.66	16.3	4.2	66.65	60.2	4.3	45.98	15.5
5.5	26.70	50.0	5.7	47.21	16.3	5.2	66.19	60.1	5.3	44.44	15.6
6.5	26.83	50.4	6.7	47.75	16.3	6.2	65.75	60.0	6.3	42.97	15.6
7.5	26.96	50.7	7.7	48.24	16.3	7.2	65.34	59.9	7.3	41.55	15.6
8.5	27.09	51.1	8.7	48.74	16.3	8.2	64.96	59.8	8.3	40.19	15.7
9.5	27.25	51.4	9.7	49.21	16.3	9.2	64.57	59.8	9.3	38.88	15.7
10.5	27.45	51.8	10.7	49.69	16.3	10.2	64.18	59.7	10.3	37.60	15.8
11.5	27.69	52.1	11.7	50.19	16.2	11.2	63.79	59.6	11.3	36.30	15.9
12.5	27.95	52.5	12.7	50.70	16.2	12.2	63.38	59.6	12.3	34.95	15.9
13.5	28.20	52.9	13.7	51.23	16.2	13.2	62.96	59.6	13.3	33.56	16.0
14.5	28.44	53.3	14.7	51.78	16.1	14.2	62.53	59.5	14.3	32.11	16.1
15.5	28.63	53.7	15.7	52.36	16.1	15.2	62.09	59.4	15.3	30.61	16.2
16.5	28.75	54.1	16.7	52.95	16.2	16.2	61.65	59.3	16.2	29.06	16.2
17.5	28.81	54.5	17.7	53.52	16.2	17.2	61.21	59.2	17.2	27.48	16.2
18.5	28.79	54.9	18.7	54.09	16.3	18.2	60.78	59.0	18.2	25.93	16.2
19.5	28.73	55.3	19.7	54.62	16.3	19.2	60.36	58.9	19.2	24.41	16.2
20.5	28.64	55.7	20.7	55.13	16.4	20.2	59.98	58.7	20.2	22.96	16.2
21.5	28.54	56.0	21.7	55.62	16.5	21.2	59.59	58.6	21.2	21.55	16.2
22.5	28.49	56.4	22.7	56.11	16.6	22.2	59.21	58.4	22.2	20.18	16.2
23.5	28.44	56.7	23.7	56.57	16.6	23.2	58.85	58.3	23.2	18.86	16.1
24.5	28.45	57.1	24.7	57.06	16.6	24.2	58.49	58.2	24.2	17.54	16.1
25.5	28.49	57.4	25.7	57.55	16.7	25.2	58.12	58.0	25.2	16.21	16.1
26.5	28.53	57.8	26.7	58.07	16.7	26.2	57.73	57.9	26.2	14.84	16.2
27.5	28.59	58.2	27.7	58.62	16.8	27.2	57.32	57.8	27.2	13.41	16.2
28.4	28.60	58.6	28.7	59.19	16.8	28.1	56.92	57.7	28.2	11.92	16.2
29.4	28.56	59.0	29.7	59.77	16.9	29.1	56.49	57.6	29.2	10.38	16.2
30.4	28.45	59.4	30.7	60.33	17.0	30.1	56.08	57.4	30.2	8.82	16.1
31.4	28.26	59.8	31.7	60.90	17.1	31.1	55.67	57.2	31.2	7.27	16.1
32.4	28.03	60.3	32.7	61.44	17.2	32.1	55.28	57.0	32.2	5.73	16.0

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (Polaris.)		Mean Solar Date.	γ Cephei (Hæv.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
Nov.	^h ^m 1 22	+88° 46'	Nov.	^h ^m 6 53	+87° 12'	Nov.	^h ^m 18 4	+86° 36'	Nov.	^h ^m 19 23	+88° 59'
	^s	"		^s	"		^s	"		^s	"
1.4	28.03	0.3	1.7	1.44	17.2	1.1	55.28	57.0	1.2	65.73	16.0
2.4	27.74	0.6	2.7	1.94	17.4	2.1	54.90	56.8	2.2	64.27	15.9
3.4	27.42	1.0	3.7	2.42	17.5	3.1	54.54	56.5	3.2	62.87	15.8
4.4	27.12	1.3	4.7	2.88	17.6	4.1	54.22	56.3	4.2	61.54	15.7
5.4	26.84	1.7	5.7	3.30	17.8	5.1	53.90	56.1	5.2	60.25	15.6
6.4	26.58	2.0	6.6	3.73	17.9	6.1	53.59	55.9	6.2	59.02	15.5
7.4	26.38	2.3	7.6	4.16	18.0	7.1	53.27	55.7	7.2	57.80	15.4
8.4	26.20	2.6	8.6	4.62	18.1	8.1	52.96	55.5	8.2	56.58	15.4
9.4	26.01	3.0	9.6	5.08	18.2	9.1	52.63	55.4	9.2	55.29	15.3
10.4	25.83	3.3	10.6	5.57	18.3	10.1	52.28	55.2	10.2	53.98	15.3
11.4	25.60	3.7	11.6	6.06	18.4	11.1	51.95	55.0	11.2	52.61	15.2
12.4	25.32	4.1	12.6	6.58	18.6	12.1	51.59	54.8	12.2	51.21	15.1
13.4	24.96	4.4	13.6	7.08	18.7	13.1	51.25	54.5	13.2	49.78	15.0
14.4	24.54	4.8	14.6	7.57	18.9	14.1	50.91	54.3	14.2	48.36	14.9
15.4	24.06	5.2	15.6	8.04	19.1	15.1	50.58	54.0	15.2	46.98	14.7
16.4	23.54	5.5	16.6	8.48	19.3	16.1	50.28	53.7	16.2	45.65	14.5
17.4	23.01	5.8	17.6	8.89	19.5	17.1	50.01	53.4	17.2	44.40	14.4
18.4	22.49	6.1	18.6	9.28	19.7	18.1	49.73	53.2	18.2	43.21	14.2
19.4	22.01	6.4	19.6	9.67	19.9	19.1	49.46	52.9	19.2	42.06	14.0
20.4	21.56	6.7	20.6	10.06	20.1	20.1	49.22	52.6	20.1	40.95	13.9
21.4	21.15	7.0	21.6	10.44	20.2	21.1	48.95	52.4	21.1	39.85	13.7
22.4	20.77	7.3	22.6	10.86	20.4	22.1	48.68	52.2	22.1	38.71	13.6
23.4	20.39	7.6	23.6	11.28	20.6	23.1	48.43	52.0	23.1	37.53	13.5
24.4	19.99	8.0	24.6	11.73	20.7	24.1	48.14	51.7	24.1	36.31	13.3
25.4	19.55	8.3	25.6	12.19	20.9	25.1	47.84	51.5	25.1	35.05	13.2
26.4	19.05	8.6	26.6	12.65	21.1	26.1	47.55	51.2	26.1	33.75	13.0
27.4	18.48	9.0	27.6	13.10	21.3	27.1	47.26	50.9	27.1	32.46	12.9
28.4	17.83	9.3	28.6	13.52	21.6	28.1	47.00	50.6	28.1	31.19	12.7
29.4	17.13	9.6	29.6	13.92	21.8	29.1	46.76	50.3	29.1	29.99	12.4
30.4	16.42	9.9	30.6	14.28	22.1	30.1	46.53	50.0	30.1	28.85	12.2
31.4	15.69	10.2	31.6	14.61	22.4	31.1	46.33	49.6	31.1	27.80	12.0

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (Polaris.)		Mean Solar Date.	γ Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
Dec.	^h ^m 1 21	+88 46	Dec.	^h ^m 6 53	+87 12	Dec.	^h ^m 18 4	+86 36	Dec.	^h ^m 19 23	+88 59
	^s	"		^s	"		^s	"		^s	"
1-4	75.69	10.2	1-6	14.61	22.4	1-1	46.33	49.6	1-1	27.80	12.0
2-4	74.96	10.4	2-6	14.91	22.6	2-0	46.16	49.3	2-1	26.82	11.7
3-3	74.29	10.7	3-6	15.20	22.9	3-0	45.98	49.0	3-1	25.90	11.5
4-3	73.65	10.9	4-6	15.49	23.1	4-0	45.81	48.7	4-1	25.02	11.3
5-3	73.05	11.2	5-6	15.78	23.3	5-0	45.64	48.5	5-1	24.14	11.1
6-3	72.48	11.4	6-6	16.10	23.5	6-0	45.47	48.2	6-1	23.23	10.9
7-3	71.88	11.6	7-6	16.42	23.7	7-0	45.29	47.9	7-1	22.30	10.7
8-3	71.28	11.9	8-6	16.77	23.9	8-0	45.10	47.6	8-1	21.34	10.5
9-3	70.63	12.2	9-6	17.11	24.2	9-0	44.91	47.3	9-1	20.33	10.2
10-3	69.91	12.4	10-6	17.47	24.5	10-0	44.71	47.0	10-1	19.30	10.1
11-3	69.13	12.7	11-6	17.81	24.8	11-0	44.53	46.7	11-1	18.28	9.8
12-3	68.29	13.0	12-5	18.12	25.1	12-0	44.37	46.3	12-1	17.30	9.5
13-3	67.41	13.2	13-5	18.39	25.4	13-0	44.22	46.0	13-1	16.37	9.3
14-3	66.51	13.4	14-5	18.64	25.7	14-0	44.10	45.6	14-1	15.52	9.0
15-3	65.61	13.6	15-5	18.87	26.0	15-0	44.00	45.2	15-1	14.75	8.7
16-3	64.76	13.8	16-5	19.06	26.3	16-0	43.90	44.9	16-1	14.03	8.4
17-3	63.94	14.0	17-5	19.26	26.6	17-0	43.81	44.6	17-1	13.37	8.1
18-3	63.16	14.2	18-5	19.48	26.8	18-0	43.75	44.3	18-1	12.72	7.9
19-3	62.44	14.3	19-5	19.68	27.1	19-0	43.66	44.0	19-1	12.08	7.6
20-3	61.70	14.5	20-5	19.91	27.3	20-0	43.56	43.7	20-1	11.40	7.4
21-3	60.99	14.7	21-5	20.15	27.6	21-0	43.45	43.4	21-1	10.70	7.1
22-3	60.25	14.9	22-5	20.42	27.8	21-9	43.34	43.1	22-1	9.94	6.9
23-3	59.44	15.1	23-5	20.68	28.1	22-9	43.22	42.8	23-1	9.16	6.6
24-3	58.57	15.3	24-5	20.92	28.4	23-9	43.11	42.4	24-1	8.38	6.4
25-3	57.63	15.5	25-5	21.16	28.8	24-9	43.02	42.1	25-1	7.62	6.1
26-3	56.67	15.7	26-5	21.37	29.1	25-9	42.94	41.7	26-0	6.90	5.7
27-3	55.65	15.8	27-5	21.53	29.4	26-9	42.91	41.3	27-0	6.27	5.4
28-3	54.63	16.0	28-5	21.66	29.8	27-9	42.88	41.0	28-0	5.73	5.1
29-3	53.62	16.1	29-5	21.77	30.1	28-9	42.88	40.6	29-0	5.28	4.7
30-3	52.64	16.2	30-5	21.83	30.4	29-9	42.90	40.3	30-0	4.89	4.4
31-3	51.72	16.2	31-5	21.92	30.7	30-9	42.92	39.9	31-0	4.56	4.1
32-3	50.83	16.3	32-5	21.99	31.0	31-9	42.95	39.6	32-0	4.25	3.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Andromedæ.		γ Pegasi. (Algenib.)		β Hydri.		ι Ceti.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination South.
	h m 0 3	° ' " +28 31	h m 0 7	° ' " +14 36	h m 0 20	° ' " -77 49	h m 0 24	° ' " -4 31
(Dec. 30.2)	4.04 -14	31.5 -0.8	56.33 -12	47.9 -0.8	22.20 -03	78.7 +0.8	47.61 -11	32.5 -0.6
Jan. 9.2	3.91 .13	30.6 1.0	56.22 .11	47.1 0.8	21.29 .88	77.6 1.4	47.50 .10	33.1 0.5
19.2	3.79 .12	29.5 1.2	56.12 .10	46.2 0.9	20.43 .81	75.9 2.0	47.40 .10	33.6 0.4
29.2	3.68 .10	28.1 1.4	56.03 .08	45.3 1.0	19.66 .72	73.7 2.5	47.31 .09	33.9 0.3
Feb. 8.1	3.59 .08	26.6 1.5	55.95 .07	44.3 1.0	18.99 .61	71.0 2.9	47.23 .07	34.2 -0.1
18.1	3.52 -05	25.0 -1.6	55.90 -04	43.3 -0.9	18.45 -08	67.9 +3.3	47.17 -05	34.2 +0.1
28.1	3.49 -02	23.5 1.5	55.87 -01	42.4 0.8	18.03 .34	64.5 3.5	47.13 -05	34.1 0.3
Mar. 10.0	3.49 +02	22.0 1.4	55.87 +02	41.6 0.7	17.76 .19	60.8 3.7	47.12 .00	33.7 0.5
20.0	3.53 .07	20.6 1.5	55.91 .06	41.1 0.5	17.65 -04	57.0 3.8	47.14 +04	33.1 0.7
30.0	3.62 .11	19.4 1.0	55.99 .10	40.7 -0.2	17.69 +.12	53.1 3.9	47.19 .08	32.3 0.9
Apr. 9.0	3.75 +16	18.6 -0.7	56.11 +14	40.6 +0.1	17.88 +.27	49.3 +3.8	47.29 +12	31.3 +1.2
18.9	3.93 .20	18.1 -0.4	56.27 .18	40.9 0.4	18.24 .43	45.5 3.7	47.43 .16	30.0 1.4
28.9	4.16 .24	17.9 0.0	56.47 .22	41.4 0.7	18.74 .57	41.9 3.5	47.61 .20	28.4 1.6
May 8.9	4.42 .28	18.1 +0.4	56.71 .25	42.3 1.0	19.38 .71	38.5 3.2	47.83 .23	26.7 1.8
18.8	4.72 .31	18.7 0.8	56.98 .28	43.4 1.3	20.15 .83	35.5 2.8	48.08 .26	24.9 1.9
28.8	5.04 +33	19.7 +1.2	57.28 +30	44.9 +1.6	21.03 +.93	32.9 +2.4	48.35 +29	22.8 +2.0
June 7.8	5.38 .35	21.1 1.5	57.60 .32	46.6 1.8	22.00 1.01	30.7 2.0	48.65 .31	20.8 2.1
17.8	5.74 .35	22.8 1.8	57.92 .33	48.5 2.0	23.04 1.06	28.9 1.4	48.97 .32	18.6 2.1
27.8	6.09 .35	24.7 2.1	58.25 .33	50.5 2.1	24.12 1.08	27.8 0.9	49.29 .32	16.5 2.0
July 7.7	6.43 .34	26.9 2.3	58.58 .32	52.7 2.2	25.21 1.08	27.2 +0.3	49.61 .31	14.5 2.0
17.7	6.76 +32	29.3 +2.4	58.89 +30	54.9 +2.2	26.28 +1.05	27.1 -0.3	49.92 +30	12.6 +1.8
27.7	7.06 .29	31.8 2.5	59.18 .27	57.1 2.2	27.30 .98	27.7 0.8	50.21 .28	10.9 1.6
Aug. 6.6	7.33 .25	34.3 2.6	59.44 .24	59.2 2.1	28.25 .89	28.8 1.4	50.47 .25	9.4 1.4
16.6	7.57 .22	36.9 2.5	59.66 .21	61.3 2.0	29.08 .76	30.4 1.8	50.71 .22	8.2 1.1
26.6	7.77 .18	39.3 2.4	59.86 .17	63.2 1.8	29.77 .62	32.5 2.2	50.92 .19	7.2 0.8
Sept. 5.5	7.92 +14	41.8 +2.5	60.01 +14	64.9 +1.6	30.31 +.45	34.9 -2.6	51.08 +15	6.5 +0.6
15.5	8.04 .10	44.0 2.2	60.13 .10	66.4 1.4	30.67 .27	37.7 2.9	51.21 .11	6.1 0.3
25.5	8.11 .06	46.1 2.0	60.20 .06	67.7 1.2	30.85 +.08	40.7 3.0	51.31 .08	5.9 +0.1
Oct. 5.5	8.15 +02	48.0 1.8	60.25 +03	68.8 1.0	30.83 -11	43.7 3.0	51.36 .04	6.0 -0.1
15.4	8.16 -01	49.7 1.5	60.26 .00	69.7 0.8	30.63 .29	46.7 2.9	51.39 +01	6.3 0.3
25.4	8.13 -04	51.1 +1.3	60.24 -03	70.3 +0.5	30.25 -46	49.5 -2.7	51.38 -01	6.7 -0.5
Nov 4.4	8.07 .07	52.2 1.0	60.20 .05	70.8 0.3	29.70 .22	52.1 2.4	51.35 .04	7.3 0.6
14.4	7.99 .09	53.0 0.7	60.13 .07	70.9 0.1	29.01 .74	54.3 1.9	51.30 .06	8.0 0.7
24.4	7.89 .11	53.5 +0.4	60.05 .09	70.9 -0.1	28.22 .24	56.0 1.4	51.23 .08	8.8 0.7
Dec. 4.3	7.78 .12	53.8 0.0	59.95 .10	70.7 0.3	27.33 .21	57.1 0.9	51.14 .09	9.5 0.8
14.3	7.66 -13	53.6 -0.5	59.85 -11	70.3 -0.5	26.40 -04	57.7 -0.2	51.05 -10	10.3 -0.7
24.2	7.52 .13	53.2 0.6	59.74 .11	69.7 0.7	25.44 .25	57.6 +0.4	50.94 .11	11.0 0.7
34.2	7.39 -14	52.5 -0.9	59.63 -12	69.0 -0.8	24.50 -28	56.9 +0.9	50.83 -11	11.7 -0.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Cassiopeia.		β Ceti.		γ Cassiopeia.		δ Piscium.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h ^m 0 34	[°] ['] +55 58	^h ^m 0 38	[°] ['] -18 32	^h ^m 0 38	[°] ['] +74 25	^h ^m 0 57	[°] ['] + 7 20
(Dec. 30.3)	39.86 - .28	42.3 - 0.1	26.05 - .12	69.6 - 0.6	49.78 - .68	55.3 + 0.3	36.62 - .10	15.4 - 0.5
Jan. 9.2	39.59 - .27	41.9 0.6	25.94 .12	70.0 0.3	49.09 .68	55.3 - 0.3	36.52 .11	14.8 0.7
19.2	39.32 - .26	41.0 1.1	25.82 .11	70.2 - 0.1	48.41 .67	54.7 0.9	36.41 .11	14.1 0.7
29.2	39.06 - .24	39.7 1.6	25.71 .10	70.2 + 0.2	47.76 .66	53.5 1.5	36.30 .11	13.4 0.6
Feb. 8.1	38.83 - .21	37.9 1.9	25.61 .09	69.8 0.5	47.17 .55	51.8 1.9	36.19 .10	12.8 0.6
18.1	38.63 - .17	35.8 - 2.2	25.53 - .07	69.2 + 0.7	46.66 - .45	49.7 - 2.4	36.10 - .08	12.2 - 0.5
28.1	38.49 - .12	33.5 2.4	25.47 - .04	68.3 1.0	46.26 .33	47.1 2.7	36.03 .06	11.8 0.4
Mar. 10.1	38.40 - .05	31.0 2.5	25.44 - .01	67.2 1.3	46.00 .20	44.4 2.9	35.99 - .05	11.5 - 0.2
20.1	38.38 + .02	28.5 2.5	25.44 + .03	65.8 1.5	45.87 - .05	41.4 2.9	35.98 + .01	11.3 0.0
30.1	38.44 - .09	26.1 2.3	25.49 - .06	64.2 1.8	45.90 + .11	38.5 2.9	36.01 - .05	11.4 + 0.2
Apr. 9.0	38.56 + .17	23.8 - 2.1	25.57 + .10	62.3 + 2.0	46.09 + .26	35.6 - 2.7	36.08 + .09	11.7 + 0.4
19.0	38.77 - .24	21.8 1.8	25.69 .14	60.2 2.1	46.42 .41	33.0 2.5	36.19 .13	12.3 0.7
29.0	39.04 - .30	20.2 1.4	25.86 .19	58.1 2.3	46.90 .54	30.7 2.1	36.34 .17	13.1 1.0
May 8.9	39.37 - .37	19.0 1.0	26.06 .23	55.7 2.4	47.51 .66	28.8 1.7	36.53 .21	14.2 1.2
18.9	39.77 - .42	18.2 - 0.5	26.31 .26	53.3 2.4	48.23 .76	27.4 1.2	36.77 .25	15.5 1.4
28.9	40.21 + .46	17.9 0.0	26.58 + .29	50.9 + 2.4	49.03 + .84	26.4 - 0.7	37.03 + .26	17.0 + 1.6
June 7.8	40.68 - .48	18.1 + 0.5	26.88 .31	48.5 2.3	49.90 .89	26.0 - 0.1	37.32 .30	18.7 1.8
17.8	41.17 - .49	18.9 1.0	27.20 .32	46.2 2.2	50.80 .92	26.2 + 0.4	37.63 .32	20.6 1.9
27.8	41.67 - .49	20.1 1.4	27.53 .33	44.1 2.0	51.73 .92	26.9 1.0	37.95 .32	22.6 2.0
July 7.8	42.16 - .49	21.7 1.8	27.85 .32	42.2 1.8	52.64 .90	28.1 1.5	38.28 .32	24.6 2.0
17.7	42.64 + .46	23.8 + 2.2	28.17 + .32	40.5 + 1.5	53.52 + .86	29.9 + 2.0	38.59 + .31	26.6 + 2.0
27.7	43.08 - .43	26.2 2.6	28.48 .30	39.2 1.2	54.36 .80	32.0 2.4	38.90 .30	28.5 1.9
Aug. 6.7	43.50 - .39	28.9 2.8	28.77 .27	38.1 0.9	55.12 .72	34.6 2.8	39.18 .27	30.3 1.8
16.6	43.86 - .34	31.8 3.0	29.02 .24	37.5 0.5	55.80 .64	37.6 3.1	39.44 .24	32.0 1.6
26.6	44.18 - .29	34.9 3.2	29.25 .20	37.2 + 0.1	56.39 .54	40.8 3.4	39.67 .21	33.5 1.4
Sept. 5.6	44.44 + .23	38.1 + 3.3	29.43 + .17	37.2 - 0.2	56.88 + .43	44.3 + 3.5	39.87 + .18	34.8 + 1.2
15.6	44.65 - .18	41.4 3.3	29.58 .13	37.5 0.5	57.25 .32	47.9 3.6	40.03 .15	35.9 1.0
25.6	44.79 - .12	44.6 3.2	29.68 .09	38.2 0.8	57.52 .20	51.6 3.7	40.16 .11	36.8 0.7
Oct. 5.5	44.88 - .06	47.8 3.1	29.75 - .05	39.1 1.0	57.66 + .08	55.3 3.7	40.25 - .08	37.4 0.5
15.5	44.92 + .01	50.9 2.9	29.78 + .01	40.2 1.2	57.68 - .05	58.9 3.6	40.31 - .05	37.8 0.3
25.5	44.90 - .05	53.7 + 2.7	29.78 - .02	41.4 - 1.3	57.59 - .15	62.4 + 3.4	40.34 + .02	38.0 + 0.1
Nov. 4.4	44.83 - .09	56.2 2.4	29.75 - .04	42.8 1.3	57.38 .26	65.6 3.1	40.34 - .01	38.0 - 0.1
14.4	44.71 - .14	58.5 2.0	29.70 - .07	44.1 1.3	57.06 .37	68.6 2.7	40.32 - .05	37.8 0.2
24.4	44.56 - .18	60.3 1.6	29.62 - .09	45.4 1.2	56.64 .46	71.1 2.3	40.28 - .06	37.6 0.4
Dec. 4.3	44.36 - .21	61.7 1.2	29.52 - .10	46.6 1.1	56.13 .55	73.2 1.8	40.21 - .07	37.1 0.5
14.3	44.13 - .24	62.7 + 0.7	29.42 - .11	47.6 - 0.9	55.55 - .61	74.8 + 1.3	40.13 - .09	36.6 - 0.6
24.3	43.88 - .26	63.1 + 0.2	29.30 - .12	48.4 0.7	54.91 .66	75.8 0.7	40.04 - .10	36.0 0.6
34.3	43.61 - .29	63.0 - 0.3	29.18 - .12	49.0 - 0.5	54.23 - .69	76.1 + 0.1	39.93 - .11	35.4 - 0.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Andromedæ.		θ^1 Ceti.		38 Cassiopeiæ.		γ Piscium.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m I 3	° ' " +35 4	h m I 18	° ' " - 8 42	h m I 23	° ' " +69 44	h m I 25	° ' " +14 48
	"	"	"	"	"	"	"	"
(Dec. 30.3)	58.55 -14	44.6 -0.3	53.50 -11	51.4 -0.8	34.40 -46	28.8 +0.8	59.21 -10	63.8 -0.5
Jan. 9.3	58.41 .15	44.2 0.6	53.39 .11	52.0 0.6	33.92 .49	29.3 +0.2	59.10 .11	63.3 0.6
19.2	58.25 .15	43.5 0.9	53.27 .12	52.6 0.4	33.42 .50	29.3 -0.4	58.98 .12	62.6 0.7
29.2	58.10 .15	42.5 1.1	53.15 .12	52.9 -0.2	32.91 .49	28.6 1.0	58.86 .12	61.9 0.7
Feb. 8.2	57.95 .14	41.2 1.4	53.04 .11	53.1 0.0	32.42 .46	27.4 1.5	58.74 .11	61.2 0.8
18.1	57.82 -12	39.7 -1.5	52.93 -10	53.0 +0.2	31.98 -41	25.7 -1.9	58.63 -10	60.4 -0.7
28.1	57.72 .09	38.2 1.6	52.84 .08	52.7 0.4	31.60 .33	23.6 2.3	58.53 .08	59.7 0.7
Mar. 10.1	57.65 -05	36.5 1.6	52.78 .05	52.2 0.6	31.31 .24	21.1 2.6	58.46 .05	59.0 0.6
20.1	57.63 .00	34.9 1.5	52.75 -02	51.4 0.9	31.12 .14	18.4 2.7	58.43 -02	58.5 0.5
30.0	57.64 +04	33.4 1.4	52.75 +02	50.4 1.1	31.04 -02	15.7 2.8	58.43 +02	58.1 0.3
Apr. 9.0	57.71 +10	32.1 -1.2	52.79 +06	49.2 +1.3	31.09 +10	12.9 -2.7	58.47 +06	57.9 -0.1
19.0	57.84 .15	31.0 0.9	52.87 .11	47.7 1.6	31.25 .22	10.3 2.5	58.55 .11	58.0 +0.2
29.0	58.02 .20	30.3 0.6	53.00 .15	46.0 1.8	31.53 .34	7.9 2.3	58.69 .16	58.3 0.5
May 8.9	58.24 .25	29.8 -0.3	53.17 .19	44.2 1.9	31.93 .45	5.8 1.9	58.86 .20	58.9 0.7
18.9	58.51 .29	29.7 +0.1	53.37 .23	42.1 2.1	32.43 .34	4.0 1.5	59.08 .23	59.7 1.0
28.9	58.82 +32	30.0 +0.5	53.62 +26	40.0 +2.2	33.01 +62	2.7 -1.0	59.33 +27	60.8 +1.2
June 7.8	59.16 .35	30.7 0.9	53.89 .28	37.8 2.2	33.67 .68	1.9 -0.5	59.62 .30	62.2 1.5
17.8	59.52 .37	31.8 1.2	54.19 .30	35.6 2.2	34.37 .72	1.6 0.0	59.93 .32	63.7 1.6
27.8	59.89 .37	33.2 1.5	54.50 .31	33.5 2.1	35.11 .75	1.9 +0.5	60.25 .33	65.4 1.8
July 7.8	60.27 .37	34.8 1.8	54.82 .32	31.5 2.0	35.87 .75	2.6 1.0	60.58 .33	67.3 1.9
17.7	60.64 +96	36.8 +2.0	55.13 +31	29.6 +1.8	36.62 +74	3.8 +1.4	60.90 +32	69.2 +1.9
27.7	60.99 .34	38.9 2.2	55.44 .30	27.9 1.6	37.34 .71	5.5 1.9	61.22 .31	71.1 1.9
Aug. 6.7	61.32 .32	41.2 2.4	55.73 .28	26.4 1.5	38.04 .67	7.6 2.3	61.53 .29	73.0 1.9
16.6	61.62 .29	43.6 2.4	56.00 .26	25.3 1.0	38.68 .61	10.0 2.6	61.81 .27	74.9 1.8
26.6	61.89 .25	46.0 2.4	56.25 .23	24.5 0.7	39.26 .55	12.8 2.9	62.06 .24	76.6 1.6
Sept. 5.6	62.13 +21	48.5 +2.4	56.46 +20	23.9 +0.4	39.78 +48	15.9 +3.2	62.29 +21	78.1 +1.5
15.6	62.32 .18	50.9 2.4	56.64 .16	23.7 +0.1	40.21 .40	19.1 3.3	62.48 .18	79.5 1.3
25.5	62.48 .14	53.2 2.3	56.79 .13	23.8 -0.2	40.57 .31	22.5 3.4	62.64 .14	80.7 1.1
Oct. 5.5	62.60 .10	55.4 2.1	56.90 .09	24.2 0.5	40.84 .22	26.0 3.5	62.77 .11	81.8 0.9
15.5	62.67 .06	57.4 1.9	56.97 .06	24.8 0.7	41.01 .13	29.4 3.4	62.86 .08	82.6 0.7
25.5	62.72 +03	59.2 +1.7	57.02 +03	25.6 -0.9	41.10 +04	32.8 +3.3	62.92 +05	83.2 +0.5
Nov. 4.4	62.73 -01	60.8 1.5	57.03 .00	26.6 1.0	41.09 -05	36.1 3.1	62.96 +02	83.6 0.3
14.4	62.70 .04	62.2 1.2	57.02 -02	27.6 1.1	40.99 .14	39.1 2.9	62.96 -01	83.9 +0.2
24.4	62.65 .07	63.2 0.9	56.98 .05	28.7 1.1	40.81 .23	41.8 2.5	62.94 .03	83.9 0.0
Dec. 4.3	62.57 .09	64.0 0.6	56.92 .07	29.7 1.0	40.54 .31	44.1 2.1	62.89 .06	83.8 -0.2
14.3	62.46 -12	64.4 +0.3	56.85 -09	30.7 -1.0	40.19 -38	46.0 +1.6	62.83 -08	83.6 -0.3
24.3	62.33 .13	64.6 0.0	56.75 .10	31.7 0.9	39.79 .43	47.4 1.1	62.74 .09	83.2 0.4
34.3	62.19 -15	64.4 -0.4	56.64 -11	32.5 -0.7	39.33 -48	48.2 +0.6	62.64 -11	82.7 -0.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Eridani. (Achernar.)		ϵ Piscium.		β Arietis.		γ Cassiopeiz.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 1 33	° ' -57 44	h m 1 39	° ' + 8 38	h m 1 48	° ' +20 18	h m 1 54	° ' +71 55
	s "	s "	s "	s "	s "	s "	s "	s "
(Dec. 30.3)	54.09 -32	106.9 -0.7	58.30 -10	29.2 -0.6	58.02 -10	28.6 -0.3	39.52 -49	47.3 +1.2
Jan. 9.3	53.76 .33	107.4 -0.1	58.20 .11	28.7 0.6	57.91 .12	28.2 0.5	39.00 .54	48.3 0.7
19.2	53.43 .33	107.2 +0.5	58.09 .12	28.0 0.6	57.78 .13	27.7 0.6	38.44 .57	48.6 +0.1
29.2	53.10 .32	106.4 1.0	57.97 .12	27.4 0.6	57.65 .13	27.0 0.7	37.86 .58	48.4 -0.5
Feb. 8.2	52.79 .30	105.2 1.5	57.84 .12	26.8 0.6	57.52 .13	26.2 0.8	37.28 .56	47.6 1.1
18.1	52.50 -27	103.4 +2.0	57.73 -11	26.3 -0.5	57.39 -12	25.4 -0.9	36.74 -52	46.3 -1.6
28.1	52.24 .23	101.2 2.4	57.63 .09	25.8 0.4	57.27 .10	24.5 0.9	36.25 .45	44.4 2.0
Mar. 10.1	52.03 .19	98.6 2.8	57.55 .06	25.5 0.3	57.18 .08	23.7 0.8	35.85 .35	42.2 2.3
20.1	51.87 .13	95.6 3.1	57.50 -03	25.3 -0.1	57.12 -04	22.9 0.7	35.55 .24	39.8 2.6
30.0	51.77 -07	92.4 3.3	57.49 +01	25.2 +0.1	57.10 .00	22.2 0.6	35.37 -12	37.1 2.7
Apr. 9.0	51.73 .00	88.9 +3.5	57.51 +05	25.4 +0.3	57.12 +04	21.7 -0.4	35.31 +02	34.3 -2.8
19.0	51.76 +07	85.4 3.6	57.58 .09	25.8 0.5	57.19 .09	21.4 -0.2	35.40 .15	31.5 2.7
29.0	51.86 .14	81.7 3.6	57.70 .14	26.5 0.8	57.30 .14	21.3 +0.1	35.62 .29	28.9 2.5
May 8.9	52.03 .20	78.1 3.5	57.85 .18	27.4 1.0	57.46 .18	21.5 0.3	35.97 .41	26.6 2.2
18.9	52.27 .27	74.7 3.4	58.05 .22	28.5 1.2	57.66 .22	21.9 0.6	36.45 .53	24.5 1.9
28.9	52.57 +33	71.3 +3.2	58.29 +25	29.9 +1.4	57.91 +26	22.7 +0.9	37.03 +63	22.8 -1.5
June 7.8	52.93 .38	68.3 2.9	58.56 .28	31.4 1.6	58.19 .29	23.7 1.1	37.70 .71	21.6 1.0
17.8	53.34 .48	65.6 2.5	58.86 .30	33.1 1.7	58.49 .31	24.9 1.3	38.45 .77	20.9 -0.5
27.8	53.78 .45	63.3 2.1	59.17 .31	34.9 1.8	58.82 .33	26.4 1.5	39.24 .81	20.6 0.0
July 7.8	54.24 .47	61.4 1.6	59.49 .32	36.8 1.9	59.15 .34	28.0 1.7	40.07 .83	20.8 +0.5
17.7	54.72 +48	60.0 +1.1	59.81 +32	38.6 +1.9	59.49 +34	29.7 +1.8	40.90 +84	21.6 +1.0
27.7	55.19 .47	59.2 +0.5	60.13 .31	40.5 1.8	59.82 .33	31.5 1.8	41.74 .82	22.8 1.4
Aug. 6.7	55.65 .45	59.0 0.0	60.43 .29	42.2 1.7	60.14 .31	33.4 1.8	42.55 .79	24.4 1.9
16.6	56.09 .41	59.3 -0.6	60.71 .27	43.9 1.6	60.44 .29	35.2 1.8	43.31 .74	26.5 2.2
26.6	56.48 .37	60.2 1.2	60.97 .25	45.4 1.4	60.72 .26	37.0 1.7	44.02 .68	28.9 2.6
Sept. 5.6	56.83 +32	61.6 -1.7	61.20 +22	46.6 +1.2	60.97 +23	38.7 +1.6	44.67 +61	31.7 +2.9
15.6	57.11 .25	63.5 2.1	61.40 .19	47.7 1.0	61.19 .20	40.3 1.5	45.24 .53	34.7 3.1
25.5	57.33 .19	65.8 2.5	61.57 .15	48.6 0.8	61.38 .17	41.7 1.3	45.73 .44	37.9 3.3
Oct. 5.5	57.49 .12	68.4 2.7	61.71 .12	49.2 0.5	61.53 .14	43.0 1.2	46.13 .35	41.2 3.4
15.5	57.57 +05	71.3 2.9	61.81 .09	49.6 0.3	61.65 .11	44.1 1.0	46.43 .25	44.6 3.4
25.5	57.58 -02	74.2 -2.9	61.89 +06	49.8 +0.1	61.74 +07	45.0 +0.8	46.62 +14	48.1 +3.4
Nov. 4.4	57.53 .09	77.1 2.9	61.93 +03	49.9 -0.1	61.80 .04	45.7 0.6	46.71 +04	51.4 3.3
14.4	57.41 .13	79.9 2.7	61.95 .00	49.7 0.2	61.83 +02	46.2 0.5	46.70 -07	54.6 3.1
24.4	57.23 .20	82.5 2.4	61.94 -02	49.5 0.3	61.83 -01	46.6 0.3	46.58 .17	57.5 2.8
Dec. 4.3	57.01 .25	84.7 2.0	61.91 .05	49.1 0.4	61.80 .04	46.8 +0.1	46.35 .27	60.2 2.4
14.3	56.74 -28	86.5 -1.5	61.85 -07	48.6 -0.5	61.75 -07	46.8 -0.1	46.04 -36	62.4 +2.0
24.3	56.44 .31	87.8 1.0	61.77 .09	48.1 0.6	61.67 .09	46.7 0.2	45.63 .44	64.2 1.5
34.3	56.12 -32	88.5 -0.5	61.68 -10	47.5 -0.7	61.57 -11	46.4 -0.4	45.15 -51	65.5 +1.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Arietis.		ξ^1 Ceti.		ϵ Cassiopeia.		ξ^2 Ceti.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 2 1	° ' " +22 58	h m 2 7	° ' " + 8 21	h m 2 20	° ' " +66 56	h m 2 22	° ' " + 7 59
(Dec. 30.3)	23.13 -10	44.6 -0.2	33.64 -0.09	57.1 -0.6	36.11 -33	44.9 +1.3	42.24 -0.08	62.4 -0.6
Jan. 9.3	23.02 -12	44.3 0.4	33.55 .10	56.5 0.6	35.75 .38	46.0 0.8	42.16 .10	61.8 0.6
19.2	22.90 -13	43.8 0.5	33.44 .12	55.9 0.6	35.34 .42	46.6 +0.3	42.05 .12	61.2 0.6
29.2	22.76 -14	43.2 0.7	33.31 .13	55.3 0.6	34.91 .44	46.6 -0.3	41.92 .13	60.6 0.5
Feb. 8.2	22.62 -14	42.4 0.8	33.18 .13	54.8 0.5	34.46 .44	46.0 0.8	41.79 .14	60.1 0.5
18.2	22.48 -13	41.6 -0.9	33.05 -12	54.3 -0.5	34.03 -42	45.0 -1.3	41.65 -13	59.6 -0.4
28.2	22.36 -11	40.7 0.9	32.93 .11	53.9 0.4	33.62 .37	43.5 1.7	41.53 .12	59.2 0.3
Mar. 10.1	22.25 -09	39.7 0.9	32.83 .09	53.5 0.3	33.28 .31	41.6 2.1	41.42 .10	58.9 0.2
20.1	22.18 -05	38.9 0.8	32.76 .06	53.3 -0.1	33.00 .23	39.3 2.3	41.33 .07	58.8 -0.1
30.1	22.14 -01	38.0 0.7	32.72 -0.08	53.3 +0.1	32.81 .14	36.9 2.5	41.28 -0.4	58.8 +0.1
Apr. 9.1	22.15 +0.3	37.4 -0.6	32.72 +0.08	53.5 +0.3	32.73 -0.3	34.3 -2.6	41.26 +0.02	58.9 +0.3
19.0	22.20 .08	36.9 0.4	32.76 .06	53.9 0.5	32.75 +0.08	31.7 2.5	41.20 .05	59.3 0.5
29.0	22.31 .13	36.6 -0.1	32.85 .11	54.5 0.7	32.88 .19	29.2 2.4	41.37 .10	59.9 0.7
May 9.0	22.46 .18	36.6 +0.1	32.98 .16	55.3 0.9	33.12 .29	26.9 2.2	41.48 .14	60.7 0.9
18.9	22.66 .22	36.9 0.4	33.16 .20	56.4 1.2	33.46 .39	24.9 1.9	41.65 .18	61.8 1.1
28.9	22.90 +.26	37.4 +0.7	33.37 +.23	57.7 +1.4	33.90 +.48	23.2 -1.5	41.85 +.22	63.0 +1.3
June 7.9	23.17 .29	38.2 0.9	33.62 .27	59.1 1.5	34.41 .55	21.8 1.1	42.09 .26	64.4 1.5
17.9	23.48 .31	39.3 1.2	33.90 .29	60.7 1.7	34.99 .61	21.0 0.7	42.36 .28	66.0 1.6
27.8	23.80 .33	40.6 1.4	34.21 .31	62.4 1.7	35.63 .65	20.5 -0.2	42.66 .30	67.7 1.7
July 7.8	24.14 .34	42.0 1.6	34.52 .32	64.2 1.8	36.29 .68	20.5 +0.3	42.97 .31	69.4 1.7
17.8	24.48 +.34	43.7 +1.7	34.84 +.32	66.0 +1.8	36.98 +.69	21.0 +0.7	43.28 +.32	71.2 +1.7
27.7	24.82 .33	45.4 1.8	35.16 .31	67.7 1.7	37.67 .68	22.0 1.1	43.60 .32	72.9 1.7
Aug. 6.7	25.15 .32	47.2 1.8	35.47 .30	69.4 1.6	38.35 .67	23.3 1.6	43.91 .31	74.5 1.6
16.7	25.46 .30	49.0 1.8	35.76 .28	71.0 1.5	39.01 .64	25.1 1.9	44.21 .29	76.0 1.4
26.7	25.75 .28	50.8 1.8	36.04 .26	72.4 1.3	39.63 .60	27.2 2.3	44.49 .27	77.4 1.2
Sept. 5.6	26.02 +.25	52.5 +1.7	36.29 +.24	73.6 +1.1	40.20 +.55	29.6 +2.5	44.75 +.25	78.5 +1.1
15.6	26.25 .22	54.1 1.6	36.51 .21	74.6 0.9	40.72 .49	32.3 2.8	44.99 .22	79.5 0.8
25.6	26.45 .19	55.6 1.4	36.70 .18	75.4 0.7	41.18 .42	35.2 3.0	45.19 .19	80.2 0.6
Oct. 5.6	26.62 .16	57.0 1.3	36.87 .15	75.9 0.5	41.57 .36	38.2 3.1	45.37 .16	80.7 0.4
15.5	26.76 .13	58.2 1.2	37.00 .12	76.3 0.2	41.89 .28	41.3 3.2	45.52 .13	81.0 +0.2
25.5	26.87 +.09	59.3 +1.0	37.10 +.09	76.4 +0.1	42.13 +.20	44.5 +3.2	45.64 +.10	81.0 0.0
Nov. 4.5	26.94 .06	60.1 0.8	37.18 .06	76.4 -0.1	42.29 .12	47.6 3.1	45.72 .07	80.9 -0.2
14.4	26.98 +.03	60.8 0.6	37.22 +.03	76.2 0.3	42.37 +.03	50.7 2.9	45.78 .04	80.7 0.3
24.4	27.00 .00	61.4 0.4	37.24 .00	75.9 0.4	42.36 -0.4	53.5 2.7	45.81 +.02	80.3 0.4
Dec. 4.4	26.98 -0.2	61.7 0.2	37.22 -0.01	75.4 0.5	42.26 .14	56.1 2.4	45.81 -0.01	79.9 0.5
14.4	26.93 -0.6	61.9 +0.1	37.18 -0.05	75.0 -0.5	42.09 -0.22	58.3 +2.1	45.78 -0.04	79.3 -0.5
24.3	26.86 .09	61.8 -0.1	37.12 .08	74.4 0.6	41.83 .29	60.2 1.6	45.73 .07	78.8 0.6
34.3	26.76 -11	61.6 -0.3	37.03 -10	73.8 -0.6	41.51 -35	61.5 +1.1	45.65 -0.09	78.2 -0.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Ceti.		ϵ Ceti.		48 Cephei (H.)		ζ Arietis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 2 37	+ 2 48	h m 2 56	+ 3 41	h m 3 7	+ 77 21	h m 3 8	+ 20 39
	^s	^s	^s	^s	^s	^s	^s	^s
(Dec. 30.3)	59.17 - .07	12.9 - 0.7	55.17 - .06	15.4 - 0.7	18.94 - .53	45.1 + 2.1	60.40 - .06	57.5 - 0.1
Jan. 9.3	59.08 .10	12.2 0.7	55.09 .09	14.6 0.7	18.33 .66	47.0 1.6	60.33 .09	57.4 0.2
19.2	58.97 .18	11.6 0.6	54.98 .11	14.0 0.6	17.61 .77	48.4 1.1	60.23 .12	57.1 0.3
29.2	58.84 .23	11.0 0.5	54.86 .13	13.4 0.5	16.80 .83	49.2 + 0.5	60.10 .14	56.8 0.4
Feb. 8.2	58.71 .24	10.5 0.4	54.72 .14	12.9 0.4	15.95 .86	49.5 - 0.1	59.95 .15	56.3 0.5
18.2	58.57 - .24	10.1 - 0.3	54.58 - .14	12.5 - 0.3	15.07 - .86	49.1 - 0.7	59.80 - .15	55.8 - 0.5
28.2	58.43 .33	9.9 - 0.2	54.44 .14	12.2 0.2	14.23 .81	48.1 1.2	59.64 .15	55.2 0.6
Mar. 10.1	58.31 .11	9.8 0.0	54.30 .18	12.1 - 0.1	13.45 .73	46.7 1.7	59.50 .13	54.6 0.6
20.1	58.22 .08	9.9 + 0.2	54.19 .10	12.1 + 0.1	12.78 .61	44.7 2.1	59.38 .11	54.0 0.6
30.1	58.15 .05	10.1 0.4	54.11 .06	12.3 0.3	12.24 .46	42.4 2.4	59.28 .08	53.4 0.5
Apr. 9.1	58.12 - .01	10.6 + 0.6	54.07 - .03	12.7 + 0.5	11.86 - .29	39.8 - 2.6	59.22 - .04	52.9 - 0.5
19.0	58.13 + .03	11.2 0.8	54.06 + .02	13.3 0.7	11.66 - .11	37.1 2.8	59.21 + .01	52.5 0.3
29.0	58.18 .08	12.1 1.0	54.10 .06	14.1 0.9	11.65 + .09	34.2 2.8	59.24 .06	52.3 - 0.2
May 9.0	58.28 .18	13.2 1.2	54.18 .11	15.0 1.1	11.83 .27	31.5 2.7	59.32 .11	52.2 + 0.1
19.0	58.43 .17	14.4 1.4	54.31 .15	16.2 1.3	12.20 .45	28.8 2.5	59.45 .15	52.4 0.3
28.9	58.61 + .21	15.9 + 1.5	54.48 + .19	17.6 + 1.4	12.74 + .62	26.4 - 2.3	59.63 + .20	52.7 + 0.5
June 7.9	58.84 .24	17.5 1.7	54.69 .23	19.1 1.6	13.45 .77	24.3 2.0	59.85 .24	53.3 0.7
17.9	59.09 .27	19.2 1.7	54.93 .26	20.7 1.7	14.29 .90	22.5 1.6	60.11 .27	54.0 0.9
27.8	59.37 .29	21.0 1.8	55.20 .28	22.4 1.7	15.26 1.00	21.1 1.1	60.39 .30	55.0 1.0
July 7.8	59.67 .30	22.8 1.8	55.49 .30	24.2 1.7	16.31 1.09	20.2 0.7	60.70 .32	56.1 1.2
17.8	59.98 + .31	24.6 + 1.7	55.80 + .31	25.9 + 1.7	17.44 + 1.15	19.8 - 0.1	61.02 + .33	57.4 + 1.3
27.7	60.30 .31	26.3 1.6	56.11 .31	27.5 1.6	18.61 1.18	19.8 + 0.3	61.36 .33	58.7 1.3
Aug. 6.7	60.60 .30	27.9 1.5	56.42 .31	29.0 1.5	19.79 1.18	20.3 0.7	61.69 .33	60.0 1.4
16.7	60.90 .29	29.3 1.3	56.72 .30	30.4 1.3	20.97 1.17	21.3 1.2	62.02 .32	61.4 1.4
26.7	61.19 .28	30.5 1.1	57.02 .28	31.6 1.1	22.13 1.13	22.7 1.6	62.33 .31	62.8 1.3
Sept. 5.6	61.45 + .23	31.4 + 0.8	57.29 + .26	32.6 + 0.8	23.24 + 1.07	24.5 + 2.0	62.63 + .29	64.0 + 1.2
15.6	61.69 .23	32.1 0.6	57.54 .24	33.2 0.6	24.28 1.00	26.6 2.3	62.91 .27	65.2 1.1
25.6	61.91 .20	32.6 0.3	57.77 .22	33.7 0.3	25.23 .90	29.1 2.6	63.17 .25	66.3 1.0
Oct. 5.6	62.10 .17	32.8 + 0.1	57.98 .29	33.9 + 0.1	26.08 .79	31.9 2.9	63.40 .22	67.3 0.9
15.5	62.26 .14	32.7 - 0.2	58.16 .16	33.8 - 0.2	26.81 .67	35.0 3.1	63.60 .19	68.1 0.7
25.5	62.39 + .11	32.4 - 0.4	58.30 + .13	33.6 - 0.4	27.42 + .53	38.1 + 3.4	63.78 + .16	68.7 + 0.6
Nov. 4.5	62.49 .08	32.0 0.5	58.42 .11	33.1 0.5	27.87 .38	41.4 3.3	63.93 .13	69.3 0.5
14.4	62.56 .06	31.4 0.6	58.51 .08	32.5 0.7	28.17 .22	44.8 3.3	64.04 .10	69.7 0.4
24.4	62.60 + .03	30.7 0.7	58.57 .04	31.8 0.7	28.31 + .05	48.0 3.2	64.12 .07	70.0 0.3
Dec. 4.4	62.61 .00	29.9 0.8	58.60 + .01	31.1 0.8	28.27 - .12	51.1 3.0	64.17 + .03	70.2 0.2
14.4	62.59 - .03	29.1 - 0.8	58.60 - .02	30.3 - 0.8	28.07 - .29	54.0 + 2.7	64.18 .00	70.3 + 0.1
24.3	62.54 .06	28.3 0.8	58.56 .05	29.5 0.8	27.70 .45	56.6 2.4	64.16 - .03	70.3 - 0.1
34.3	62.46 - .08	27.6 - 0.7	58.50 - .08	28.7 - 0.7	27.18 - .59	58.8 + 2.0	64.11 - .07	70.2 - 0.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Persei.		ϵ Eridani.		δ Persei.		η Tauri.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 3 16	° ' " +49 29	h m 3 28	° ' " - 9 47	h m 3 35	° ' " +47 27	h m 3 41	° ' " +23 47
(Dec. 30.4)	60.12 -10	58.6 +1.2	6.30 -06	80.4 -1.3	37.57 -08	46.3 +1.2	23.43 -04	23.4 +0.1
Jan. 9.3	59.99 .15	59.6 0.8	6.22 .09	81.6 1.1	37.47 .13	47.3 0.9	23.37 .07	23.5 0.0
19.3	59.82 .19	60.3 0.5	6.12 .12	82.6 0.9	37.32 .17	48.0 0.6	23.28 .11	23.4 -0.1
29.3	59.61 .22	60.6 +0.1	5.99 .14	83.4 0.7	37.13 .20	48.4 +0.2	23.16 .13	23.2 0.2
Feb. 8.2	59.37 .24	60.5 -0.3	5.84 .13	84.0 0.4	36.91 .23	48.5 -0.1	23.01 .13	23.0 0.3
18.2	59.13 -0.24	60.0 -0.7	5.68 -0.16	84.3 -0.2	36.68 -0.24	48.2 -0.5	22.85 -0.16	22.6 -0.4
28.2	58.88 .24	59.2 1.0	5.52 .16	84.4 +0.1	36.44 .23	47.5 0.8	22.69 .16	22.1 0.5
Mar. 10.2	58.65 .22	58.0 1.3	5.36 .13	84.2 0.3	36.21 .22	46.6 1.1	22.52 .15	21.5 0.6
20.1	58.45 .18	56.6 1.5	5.22 .13	83.7 0.6	36.00 .19	45.3 1.3	22.38 .13	20.9 0.6
30.1	58.29 .13	55.0 1.7	5.11 .20	83.0 0.8	35.84 .14	43.9 1.5	22.26 .10	20.3 0.6
Apr. 9.1	58.19 -0.07	53.2 -1.8	5.02 -0.07	82.0 +1.1	35.72 -0.09	42.3 -1.6	22.17 -0.07	19.7 -0.6
19.1	58.15 -0.01	51.4 1.8	4.98 -0.02	80.8 1.3	35.65 -0.03	40.7 1.7	22.13 -0.02	19.1 0.5
29.0	58.17 +0.06	49.6 1.7	4.98 +0.02	79.3 1.6	35.66 +0.03	39.0 1.6	22.13 +0.03	18.7 0.4
May 9.0	58.26 .13	47.9 1.6	5.02 .06	77.6 1.8	35.72 .10	37.4 1.5	22.18 .08	18.4 -0.2
19.0	58.42 .19	46.4 1.4	5.10 .11	75.8 1.9	35.85 .16	35.9 1.4	22.28 .13	18.3 0.0
28.9	58.65 +0.26	45.1 -1.2	5.23 +0.15	73.8 +2.0	36.05 +0.23	34.7 -1.2	22.43 +0.17	18.3 +0.1
June 7.9	58.94 .31	44.1 0.9	5.41 .19	71.7 2.1	36.31 .28	33.6 0.9	22.63 .22	18.5 0.3
17.9	59.27 .36	43.4 0.6	5.62 .22	69.6 2.1	36.61 .33	32.8 0.6	22.86 .25	19.0 0.5
27.9	59.65 .40	43.0 -0.3	5.86 .23	67.4 2.1	36.96 .37	32.4 -0.3	23.13 .28	19.6 0.7
July 7.8	60.07 .42	42.9 +0.1	6.13 .28	65.3 2.0	37.35 .40	32.2 0.0	23.43 .31	20.4 0.8
17.8	60.50 +0.44	43.2 +0.4	6.41 +0.29	63.4 +1.9	37.76 +0.42	32.3 +0.3	23.74 +0.32	21.3 +1.0
27.8	60.95 .45	43.8 0.7	6.71 .30	61.6 1.7	38.19 .43	32.7 0.5	24.07 .33	22.3 1.1
Aug. 6.8	61.40 .45	44.6 1.0	7.01 .30	60.0 1.4	38.63 .44	33.4 0.8	24.41 .34	23.4 1.1
16.7	61.85 .44	45.8 1.3	7.31 .30	58.7 1.1	39.07 .43	34.3 1.1	24.75 .33	24.6 1.1
26.7	62.29 .43	47.2 1.5	7.61 .29	57.8 0.8	39.50 .42	35.5 1.3	25.08 .32	25.7 1.1
Sept. 5.7	62.71 +0.41	48.8 +1.7	7.89 +0.27	57.1 +0.4	39.91 +0.41	36.9 +1.5	25.40 +0.31	26.8 +1.1
15.6	63.10 .38	50.5 1.9	8.16 .26	56.9 +0.1	40.31 .38	38.4 1.6	25.70 .29	27.9 1.0
25.6	63.47 .35	52.5 2.0	8.40 .23	57.0 -0.3	40.68 .36	40.1 1.7	25.98 .27	28.8 0.9
Oct. 5.6	63.80 .31	54.5 2.1	8.62 .21	57.5 0.6	41.02 .33	41.8 1.8	26.25 .25	29.7 0.8
15.6	64.10 .27	56.6 2.1	8.82 .18	58.2 0.9	41.33 .29	43.7 1.9	26.49 .23	30.5 0.7
25.5	64.35 +0.23	58.7 +2.1	8.99 +0.16	59.3 -1.2	41.60 +0.25	45.6 +1.9	26.70 +0.20	31.2 +0.7
Nov. 4.5	64.57 .19	60.9 2.1	9.13 .13	60.6 1.4	41.84 .21	47.6 1.9	26.89 .17	31.8 0.6
14.5	64.73 .14	63.0 2.1	9.24 .09	62.0 1.5	42.02 .16	49.5 1.9	27.04 .14	32.3 0.5
24.5	64.84 .09	65.0 2.0	9.31 .06	63.6 1.6	42.16 .11	51.4 1.8	27.16 .10	32.8 0.4
Dec. 4.4	64.90 +0.03	66.9 1.8	9.36 +0.03	65.2 1.6	42.25 .06	53.1 1.7	27.24 .06	33.1 0.3
14.4	64.91 -0.02	68.6 +1.6	9.37 -0.01	66.8 -1.5	42.29 +0.01	54.7 +1.5	27.29 +0.03	33.4 +0.2
24.4	64.86 .07	70.0 1.4	9.34 .04	68.2 1.4	42.27 -0.05	56.2 1.3	27.30 -0.01	33.6 +0.1
34.4	64.76 -0.12	71.2 +1.1	9.28 -0.07	69.6 -1.2	42.20 -0.10	57.3 +1.1	27.26 -0.05	33.6 0.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Persei.		γ Eridani.		γ Tauri.		ε Tauri.		
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	
	h m 3 47	° ' " +31 34	h m 3 53	° ' " -13 47	h m 4 13	° ' " +15 22	h m 4 22	° ' " +18 57	
	s	"	s	"	s	"	s	"	
(Dec. 30-4)	41.32 -03	52.6 +0.5	15.24 -03	62.7 -1.6	57.78 -01	53.1 -0.3	38.04 .00	16.4 -0.1	
Jan. 9-3	41.26 .08	53.0 0.3	15.18 .08	64.1 1.3	57.75 .05	52.9 0.3	38.02 -04	16.3 0.2	
19-3	41.16 .11	53.3 +0.2	15.08 .11	65.4 1.1	57.68 .09	52.5 0.3	37.96 .08	16.2 0.2	
29-3	41.03 .14	53.3 0.0	14.95 .14	66.3 0.8	57.58 .12	52.2 0.3	37.86 .11	15.9 0.2	
Feb. 8-3	40.88 .17	53.2 -0.2	14.80 .16	67.0 0.6	57.45 .14	51.9 0.3	37.74 .14	15.7 0.3	
	18.2	40.70 -18	52.9 -0.4	14.64 -17	67.4 -0.3	57.30 -16	51.5 -0.3	37.58 -16	15.4 -0.3
	28.2	40.52 .18	52.4 0.6	14.47 .17	67.6 0.0	57.14 .16	51.2 0.3	37.42 .17	15.1 0.3
Mar. 10-2	40.34 .17	51.7 0.7	14.30 .16	67.4 +0.3	56.98 .16	50.9 0.3	37.25 .16	14.8 0.3	
20-2	40.18 .15	50.9 0.8	14.14 .15	66.9 0.6	56.82 .14	50.6 0.3	37.09 .15	14.4 0.3	
30-1	40.04 .12	50.0 0.9	14.01 .12	66.1 0.9	56.69 .12	50.3 0.2	36.95 .13	14.1 0.3	
Apr. 9-1	39.94 -08	49.1 -0.9	13.90 -09	65.1 +1.2	56.58 -09	50.1 -0.2	36.83 -10	13.7 -0.3	
19-1	39.89 -03	48.2 0.9	13.83 .05	63.8 1.4	56.51 .05	50.0 0.0	36.76 .06	13.5 0.2	
29-0	39.88 +02	47.4 0.8	13.80 -01	62.2 1.7	56.48 -01	50.0 +0.1	36.72 -01	13.3 -0.1	
May 9-0	39.93 .07	46.6 0.7	13.82 +04	60.4 1.9	56.50 +04	50.2 0.2	36.73 +03	13.2 0.0	
19-0	40.03 .13	46.0 0.5	13.88 .08	58.5 2.0	56.57 .09	50.5 0.4	36.79 .08	13.3 +0.2	
	29-0	40.18 +18	45.6 -0.3	13.98 +13	56.3 +2.2	56.68 +13	50.9 +0.5	36.89 +13	13.6 +0.3
June 7-9	40.39 .22	45.4 -0.1	14.13 .17	54.1 2.3	56.83 .18	51.5 0.7	37.05 .17	13.9 0.4	
17-9	40.63 .26	45.3 +0.1	14.32 .21	51.8 2.3	57.03 .21	52.2 0.8	37.24 .21	14.4 0.6	
27-9	40.91 .30	45.5 0.3	14.55 .24	49.6 2.2	57.26 .25	53.1 0.9	37.47 .24	15.0 0.7	
July 7-9	41.23 .32	45.9 0.5	14.80 .26	47.4 2.1	57.52 .27	54.1 1.0	37.73 .27	15.8 0.8	
	17.8	41.56 +34	46.5 +0.7	15.07 +28	45.3 +2.0	57.80 +29	55.1 +1.0	38.01 +30	16.6 +0.9
	27.8	41.91 .35	47.2 0.8	15.36 .30	43.5 1.8	58.10 .31	56.2 1.1	38.32 .31	17.5 0.9
Aug. 6-8	42.27 .36	48.1 1.0	15.66 .30	41.8 1.5	58.42 .31	57.2 1.0	38.63 .32	18.4 0.9	
16-7	42.63 .36	49.1 1.0	15.97 .30	40.5 1.1	58.73 .32	58.3 1.0	38.95 .32	19.3 0.9	
26-7	42.98 .35	50.2 1.1	16.27 .30	39.6 0.8	59.05 .31	59.2 0.9	39.27 .32	20.2 0.8	
Sept. 5-7	43.32 +34	51.3 +1.1	16.56 +29	39.0 +0.4	59.36 +31	60.0 +0.8	39.59 +31	21.0 +0.7	
15-7	43.65 .32	52.5 1.2	16.84 .27	38.8 0.0	59.66 .29	60.7 0.6	39.90 .30	21.7 0.6	
25-6	43.96 .30	53.7 1.2	17.10 .25	39.0 -0.4	59.95 .28	61.3 0.5	40.20 .29	22.2 0.5	
Oct. 5-6	44.25 .28	54.8 1.1	17.34 .23	39.7 0.8	60.22 .26	61.7 0.3	40.48 .27	22.7 0.4	
15-6	44.51 .25	55.9 1.1	17.56 .21	40.6 1.1	60.47 .24	61.9 +0.2	40.75 .25	23.0 0.3	
	25-6	44.75 +22	57.0 +1.0	17.75 +18	41.9 -1.4	60.70 +22	62.0 0.0	40.99 +23	23.3 +0.2
Nov. 4-5	44.95 .19	58.0 1.0	17.92 .15	43.5 1.6	60.91 .19	62.0 -0.1	41.21 .20	23.4 +0.1	
14-5	45.13 .15	59.0 0.9	18.05 .12	45.2 1.8	61.08 .16	61.9 0.2	41.40 .17	23.5 0.0	
24-5	45.26 .12	59.9 0.9	18.15 .08	47.0 1.9	61.23 .13	61.7 0.2	41.56 .14	23.4 0.0	
Dec. 4-4	45.36 .08	60.7 0.8	18.22 .05	48.9 1.9	61.34 .09	61.4 0.3	41.68 .10	23.4 -0.1	
	14-4	45.41 +03	61.4 +0.7	18.25 +01	50.7 -1.8	61.41 +05	61.1 -0.3	41.76 +06	23.3 -0.1
	24-4	45.42 -01	62.0 0.5	18.24 -03	52.5 1.7	61.45 +01	60.8 0.3	41.81 +02	23.2 0.1
	34-4	45.39 -05	62.5 +0.4	18.20 -06	54.1 -1.5	61.44 -02	60.4 -0.3	41.81 -02	23.0 -0.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Tauri. (Aldebaran.)		α Camelopardalis.		ϵ Aurigæ.		ι Orionis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 4 30	° ' +16 18	h m 4 43	° ' +66 9	h m 4 50	° ' +33 0	h m 4 58	° ' +15 15
(Dec. 30.4)	s 2.55 +.01	" 16.7 -0.3	s 52.38 -0.4	" 78.4 +2.4	s 19.42 +.03	" 21.5 +0.7	s 43.02 +.03	" 45.8 -0.4
Jan. 9.4	2.54 -.04	16.5 0.3	52.28 .13	80.6 2.1	19.42 -.02	22.1 0.6	43.03 -.01	45.4 0.3
19.4	2.48 .08	16.2 0.3	52.09 .24	82.5 1.8	19.37 .07	22.6 0.5	42.99 .06	45.1 0.3
29.3	2.39 .11	15.9 0.3	51.80 .32	84.1 1.4	19.28 .12	23.0 0.3	42.92 .09	44.8 0.3
Feb. 8.3	2.26 .14	15.6 0.3	51.45 .38	85.2 0.9	19.14 .15	23.2 +0.2	42.80 .13	44.5 0.3
18.3	2.11 -.16	15.3 -0.3	51.04 -.43	85.9 +0.5	18.97 -.18	23.3 0.0	42.66 -.15	44.3 -0.3
28.2	1.95 .17	15.0 0.3	50.60 .45	86.1 0.0	18.79 .19	23.2 -0.1	42.50 .16	44.0 0.2
Mar. 10.2	1.78 .16	14.7 0.3	50.14 .44	85.9 -0.5	18.59 .19	22.9 0.3	42.33 .17	43.8 0.2
20.2	1.62 .15	14.4 0.3	49.71 .42	85.1 1.0	18.40 .18	22.5 0.5	42.16 .16	43.6 0.2
30.2	1.48 .13	14.1 0.3	49.31 .37	83.9 1.4	18.23 .16	21.9 0.6	42.01 .14	43.4 0.2
Apr. 9.1	1.36 -.10	13.9 -0.2	48.97 -.30	82.3 -1.7	18.08 -.13	21.2 -0.7	41.88 -.12	43.3 -0.1
19.1	1.28 .06	13.8 -0.1	48.70 .22	80.4 2.0	17.97 .09	20.4 0.8	41.78 .08	43.2 0.0
29.1	1.24 -.02	13.8 0.0	48.52 .13	78.2 2.2	17.90 -.04	19.6 0.8	41.71 -.04	43.3 +0.1
May 9.1	1.24 +.03	13.8 +0.1	48.44 -.03	75.9 2.3	17.88 +.01	18.8 0.8	41.69 .00	43.4 0.1
19.0	1.29 .07	14.0 0.3	48.46 +.08	73.5 2.4	17.92 .06	18.1 0.7	41.71 +.05	43.6 0.3
29.0	1.39 +.12	14.4 +0.4	48.59 +.18	71.2 -2.3	18.01 +.11	17.4 -0.6	41.78 +.09	43.9 +0.4
June 8.0	1.53 .16	14.9 0.5	48.82 .28	68.9 2.2	18.15 .16	16.8 0.5	41.89 .13	44.4 0.5
17.9	1.71 .20	15.5 0.6	49.14 .37	66.8 2.0	18.33 .21	16.4 0.4	42.05 .17	45.0 0.6
27.9	1.93 .23	16.2 0.8	49.56 .45	64.9 1.8	18.56 .25	16.1 0.2	42.24 .21	45.6 0.7
July 7.9	2.18 .26	17.0 0.9	50.04 .52	63.2 1.5	18.83 .28	16.0 -0.1	42.47 .24	46.4 0.8
17.9	2.46 +.28	17.9 +0.9	50.60 +.58	61.9 -1.2	19.13 +.31	16.0 +0.1	42.72 +.27	47.2 +0.8
27.8	2.75 .30	18.9 0.9	51.20 .63	60.8 0.9	19.45 .33	16.1 0.2	43.00 .29	48.0 0.8
Aug. 6.8	3.06 .31	19.8 0.9	51.85 .66	60.1 0.3	19.79 .35	16.4 0.3	43.29 .30	48.8 0.8
16.8	3.37 .32	20.7 0.9	52.52 .68	59.8 -0.1	20.14 .35	16.8 0.4	43.60 .31	49.6 0.7
26.8	3.69 .32	21.6 0.8	53.21 .69	59.9 +0.2	20.50 .36	17.2 0.5	43.91 .31	50.3 0.6
Sept. 5.7	4.00 +.31	22.3 +0.7	53.90 +.69	60.3 +0.6	20.86 +.36	17.8 +0.6	44.22 +.31	50.9 +0.5
15.7	4.31 .30	22.9 0.5	54.59 .68	61.0 0.9	21.21 .35	18.4 0.6	44.53 .31	51.3 0.4
25.7	4.61 .29	23.4 0.4	55.26 .66	62.1 1.2	21.56 .34	19.0 0.6	44.83 .30	51.6 0.2
Oct. 5.6	4.89 .27	23.7 0.2	55.90 .63	63.4 1.5	21.89 .33	19.6 0.6	45.12 .29	51.8 +0.1
15.6	5.15 .25	23.9 +0.1	56.51 .58	65.1 1.8	22.21 .31	20.3 0.7	45.40 .27	51.8 -0.1
25.6	5.40 +.23	24.0 0.0	57.07 +.53	67.0 +2.0	22.51 +.29	21.0 +0.7	45.67 +.25	51.6 -0.2
Nov. 4.6	5.62 .21	23.9 -0.1	57.57 .47	69.2 2.3	22.78 .26	21.6 0.7	45.91 .23	51.4 0.3
14.6	5.81 .18	23.8 0.1	58.01 .39	71.5 2.4	23.02 .23	22.3 0.7	46.13 .21	51.1 0.4
24.5	5.98 .15	23.6 0.2	58.36 .31	74.0 2.5	23.23 .19	23.0 0.7	46.32 .17	50.7 0.4
Dec. 4.5	6.10 .11	23.3 0.3	58.63 .22	76.6 2.6	23.40 .15	23.8 0.7	46.48 .14	50.3 0.4
14.5	6.19 +.07	23.0 -0.3	58.79 +.12	79.1 +2.5	23.53 +.10	24.5 +0.7	46.60 +.10	49.9 -0.4
24.4	6.24 +.03	22.7 0.3	58.86 +.01	81.6 2.4	23.61 .05	25.1 0.7	46.67 .06	49.5 0.4
34.4	6.25 -.01	22.4 -0.3	58.82 -.08	84.0 +2.3	23.64 +.01	25.8 +0.6	46.71 +.01	49.1 -0.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Aurigæ. (<i>Capella</i> .)		β Orionis. (<i>Rigel</i> .)		β Tauri.		Groombridge 966.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 5 9	° ' " +45 53	h m 5 9	° ' " - 8 18	h m 5 19	° ' " +28 31	h m 5 25	° ' " +74 58
(Dec. 30.4)	7.54 +.04	46.4 +1.4	37.22 +.02	70.2 -1.7	49.15 +.06	21.8 +0.4	64.25 +.02	43.4 +2.7
Jan. 9.4	7.55 -.02	47.7 1.3	37.22 -.02	71.8 1.5	49.18 +.01	22.2 0.4	64.19 -.14	46.1 2.6
19.4	7.50 .08	48.8 1.1	37.18 .06	73.2 1.3	49.16 -.04	22.5 0.3	63.96 .30	48.7 2.4
29.4	7.39 .13	49.9 0.9	37.10 .10	74.4 1.1	49.09 .09	22.8 0.3	63.59 .44	50.8 2.0
Feb. 8.3	7.23 .18	50.7 0.6	36.98 .13	75.4 0.9	48.98 .13	23.1 0.2	63.08 .56	52.6 1.6
18.3	7.03 -.21	51.1 +0.3	36.84 -.26	76.1 -0.6	48.83 -.16	23.2 +0.1	62.46 -.65	54.0 +1.1
28.3	6.80 .23	51.4 0.0	36.67 .17	76.6 0.3	48.66 .18	23.2 -0.1	61.77 .71	54.8 +0.6
Mar. 10.2	6.56 .24	51.2 -0.3	36.50 .18	76.8 -0.1	48.48 .19	23.1 0.2	61.04 .73	55.1 0.0
20.2	6.32 .23	50.8 0.6	36.32 .17	76.8 +0.2	48.29 .18	22.9 0.3	60.31 .72	54.8 -0.5
30.2	6.09 .21	50.1 0.8	36.16 .16	76.5 0.4	48.11 .17	22.5 0.4	59.60 .67	54.1 1.0
Apr. 9.2	5.89 -.18	49.2 -1.0	36.01 -.13	76.0 +0.7	47.96 -.14	22.1 -0.3	58.96 -.60	52.8 -1.5
19.1	5.74 .13	48.1 1.2	35.89 .10	75.2 0.9	47.83 .11	21.6 0.3	58.41 .49	51.1 1.9
29.1	5.63 .08	46.8 1.4	35.81 .07	74.2 1.1	47.74 .07	21.0 0.3	57.97 .37	49.0 2.2
May 9.1	5.58 -.02	45.4 1.4	35.76 -.03	73.0 1.3	47.70 -.02	20.5 0.3	57.67 .23	46.6 2.5
19.1	5.59 +0.4	43.9 1.4	35.76 +0.2	71.5 1.5	47.71 +0.3	20.0 0.3	57.52 -.07	44.0 2.6
29.0	5.66 +1.10	42.5 -1.4	35.80 +0.6	69.9 +1.7	47.76 +0.8	19.5 -0.4	57.53 +.08	41.3 -2.7
June 8.0	5.79 .16	41.1 1.3	35.88 .10	68.2 1.8	47.86 .13	19.1 0.3	57.68 .23	38.6 2.7
18.0	5.98 .22	39.9 1.2	36.00 .14	66.4 1.9	48.01 .17	18.8 0.2	57.99 .38	35.9 2.6
27.9	6.23 .27	38.8 1.0	36.17 .18	64.5 1.9	48.21 .21	18.6 -0.1	58.45 .52	33.4 2.4
July 7.9	6.52 .31	37.8 0.9	36.36 .21	62.6 1.8	48.44 .25	18.5 0.0	59.03 .64	31.1 2.2
17.9	6.85 +.35	37.1 -0.7	36.59 +.24	60.8 +1.7	48.70 +.28	18.6 +0.1	59.73 +.73	28.9 -2.0
27.9	7.22 .38	36.5 0.5	36.83 .26	59.1 1.6	48.99 .30	18.7 0.1	60.54 .84	27.1 1.7
Aug. 6.8	7.60 .39	36.1 0.3	37.10 .27	57.6 1.4	49.30 .32	18.8 0.2	61.42 .92	25.6 1.3
16.8	8.00 .41	36.0 -0.1	37.38 .28	56.3 1.2	49.62 .33	19.1 0.3	62.38 .98	24.5 0.9
26.8	8.42 .42	36.0 +0.1	37.67 .29	55.3 0.9	49.96 .34	19.4 0.3	63.39 1.02	23.8 0.6
Sept. 5.8	8.85 +.42	36.2 +0.3	37.96 +.29	54.6 +0.5	50.30 +.34	19.7 +0.3	64.43 +1.05	23.4 -0.2
15.7	9.27 .42	36.6 0.5	38.26 .29	54.3 +0.1	50.64 .34	19.9 0.3	65.48 1.05	23.4 +0.2
25.7	9.69 .41	37.1 0.6	38.55 .28	54.3 -0.2	50.98 .33	20.2 0.3	66.54 1.04	23.9 0.6
Oct. 5.7	10.10 .40	37.8 0.8	38.83 .27	54.7 0.6	51.31 .32	20.5 0.3	67.57 1.02	24.7 1.0
15.6	10.49 .38	38.6 0.9	39.09 .26	55.5 0.9	51.63 .31	20.8 0.3	68.58 .97	25.9 1.4
25.6	10.86 +.36	39.6 +1.0	39.35 +.24	56.6 -1.2	51.94 +.30	21.0 +0.3	69.51 +.90	27.5 +1.8
Nov. 4.6	11.20 .33	40.7 1.2	39.58 .22	57.9 1.5	52.23 .27	21.3 0.3	70.37 .81	29.4 2.1
14.6	11.51 .29	41.9 1.3	39.79 .19	59.5 1.7	52.49 .24	21.5 0.3	71.13 .71	31.6 2.4
24.5	11.78 .24	43.2 1.3	39.97 .16	61.3 1.8	52.72 .21	21.8 0.3	71.78 .58	34.1 2.6
Dec. 4.5	12.00 .19	44.6 1.4	40.11 .13	63.1 1.9	52.91 .17	22.1 0.3	72.30 .44	36.8 2.7
14.5	12.17 +.14	46.0 +1.4	40.22 +0.9	65.0 -1.8	53.07 +.13	22.5 +0.3	72.67 +.28	39.6 +2.8
24.5	12.28 .08	47.4 1.4	40.28 .05	66.8 1.8	53.18 .08	22.8 0.3	72.87 +.12	42.5 2.8
34.4	12.32 +0.2	48.8 +1.3	40.31 +0.1	68.5 -1.6	53.24 +0.4	23.1 +0.4	72.91 -0.4	45.2 +2.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♄ Orionis.		♈ Leporis.		♌ Orionis.		♉ Columbae.	
	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination South.
	h m 5 26	° ' — 0 22	h m 5 28	° ' — 17 53	h m 5 30	° ' — 1 15	h m 5 35	° ' — 34 7
	s	"	s	"	s	"	s	"
(Dec. 30.4)	46.68 +.04	26.6 — 1.3	13.25 +.02	42.5 — 2.1	61.22 +.05	58.9 — 1.3	57.35 .00	42.6 — 2.9
Jan. 9.4	46.70 .00	27.8 1.2	13.25 —.02	44.6 2.0	61.25 .00	60.2 1.2	57.33 —.05	45.4 2.6
19.4	46.68 —.04	28.9 1.1	13.21 .06	46.5 1.8	61.23 —.04	61.4 1.1	57.26 .10	47.9 2.3
29.4	46.62 .08	29.9 0.9	13.12 .10	48.1 1.5	61.17 .08	62.4 0.9	57.14 .14	50.1 2.0
Feb. 8.3	46.52 .11	30.7 0.7	13.00 .14	49.4 1.2	61.07 .11	63.3 0.7	56.98 .18	51.9 1.6
18.3	46.38 —.14	31.3 — 0.5	12.85 —.16	50.5 — 0.8	60.94 —.14	63.9 — 0.6	56.79 —.21	53.2 — 1.2
28.3	46.23 .16	31.8 0.3	12.67 .18	51.1 0.5	60.79 .16	64.4 0.4	56.57 .23	54.1 0.7
Mar. 10.3	46.06 .17	32.0 — 0.2	12.49 .19	51.5 — 0.2	60.62 .17	64.6 — 0.2	56.33 .24	54.6 — 0.2
20.2	45.89 .17	32.1 0.0	12.30 .19	51.5 + 0.2	60.45 .17	64.7 0.0	56.10 .23	54.6 + 0.2
30.2	45.73 .16	32.0 + 0.2	12.11 .18	51.2 0.5	60.28 .16	64.6 + 0.2	55.86 .22	54.2 0.7
Apr. 9.2	45.58 —.14	31.7 + 0.4	11.94 —.16	50.5 + 0.8	60.13 —.14	64.3 + 0.4	55.65 —.20	53.3 + 1.1
19.1	45.46 .11	31.2 0.6	11.80 .13	49.5 1.1	60.01 .11	63.8 0.6	55.46 .17	52.0 1.5
29.1	45.37 .07	30.6 0.7	11.69 .09	48.2 1.4	59.91 .07	63.2 0.8	55.30 .13	50.4 1.8
May 9.1	45.32 —.03	29.8 0.9	11.62 .05	46.7 1.7	59.86 —.03	62.3 0.9	55.19 .09	48.4 2.1
19.1	45.31 +.01	28.8 1.1	11.58 —.01	44.9 1.9	59.84 +.01	61.3 1.1	55.12 —.05	46.1 2.4
29.0	45.34 +.05	27.7 + 1.2	11.60 +.03	43.0 + 2.0	59.87 +.05	60.2 + 1.2	55.09 .00	43.6 + 2.6
June 8.0	45.41 .09	26.4 1.3	11.65 .08	40.9 2.2	59.94 .09	58.9 1.3	55.12 +.05	40.8 2.8
18.0	45.53 .13	25.0 1.4	11.75 .12	38.7 2.3	60.05 .13	57.5 1.4	55.19 .09	38.0 2.9
28.0	45.68 .17	23.6 1.4	11.89 .16	36.4 2.3	60.20 .27	56.0 1.5	55.31 .14	35.1 2.9
July 7.9	45.87 .20	22.2 1.5	12.06 .19	34.1 2.2	60.38 .20	54.5 1.5	55.47 .18	32.3 2.8
17.9	46.09 +.23	20.7 + 1.4	12.27 +.22	31.9 + 2.1	60.60 +.23	53.1 + 1.4	55.67 +.22	29.6 + 2.6
27.9	46.33 .25	19.4 1.3	12.50 .24	29.9 1.9	60.83 .25	51.7 1.3	55.90 .25	27.1 2.4
Aug. 6.8	46.59 .27	18.1 1.2	12.76 .26	28.1 1.6	61.09 .27	50.4 1.2	56.16 .27	24.9 2.0
16.8	46.87 .28	17.1 1.0	13.03 .28	26.6 1.3	61.36 .28	49.3 1.0	56.45 .29	23.0 1.6
26.8	47.15 .29	16.2 0.7	13.32 .29	25.4 1.0	61.65 .29	48.5 0.7	56.75 .31	21.6 1.2
Sept. 5.8	47.44 +.29	15.6 + 0.5	13.61 +.30	24.6 + 0.6	61.94 +.29	47.9 + 0.5	57.07 +.32	20.7 + 0.7
15.7	47.74 .29	15.3 + 0.2	13.91 .30	24.3 + 0.1	62.23 .29	47.5 + 0.2	57.39 .32	20.3 + 0.1
25.7	48.03 .29	15.2 — 0.1	14.20 .29	24.4 — 0.3	62.52 .29	47.5 — 0.1	57.72 .32	20.4 — 0.4
Oct. 5.7	48.32 .28	15.5 0.4	14.49 .28	24.9 0.8	62.81 .28	47.8 0.4	58.04 .31	21.2 1.0
15.7	48.60 .27	16.1 0.7	14.77 .27	25.9 1.2	63.09 .27	48.4 0.7	58.34 .30	22.4 1.5
25.6	48.86 +.26	16.9 — 1.0	15.04 +.25	27.3 — 1.6	63.36 +.26	49.3 — 1.0	58.63 +.28	24.2 — 2.0
Nov. 4.6	49.11 .24	18.0 1.2	15.29 .23	29.1 1.9	63.61 .24	50.4 1.2	58.90 .25	26.4 2.4
14.6	49.34 .21	19.3 1.3	15.51 .20	31.1 2.1	63.84 .22	51.7 1.4	59.13 .22	29.0 2.7
24.5	49.54 .18	20.6 1.4	15.70 .17	33.4 2.3	64.04 .19	53.2 1.5	59.33 .18	31.8 2.9
Dec. 4.5	49.70 .15	22.1 1.5	15.85 .14	35.7 2.4	64.21 .15	54.7 1.5	59.48 .13	34.9 3.0
14.5	49.83 +.11	23.6 — 1.4	15.97 +.10	38.1 — 2.4	64.35 +.12	56.2 — 1.5	59.59 +.09	38.0 — 3.1
24.5	49.93 .07	25.0 1.4	16.05 .05	40.5 2.3	64.44 .08	57.7 1.4	59.66 +.04	41.0 3.0
34.4	49.97 +.03	26.3 — 1.3	16.08 +.01	42.7 — 2.1	64.49 +.03	59.1 — 1.3	59.67 —.01	43.9 — 2.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Orionis.		γ Orionis.		22 Camelop. (H.)		μ Geminorum.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h ^m 5 49	[°] ['] + 7 23	^h ^m 6 1	[°] ['] + 14 46	^h ^m 6 7	[°] ['] + 69 21	^h ^m 6 16	[°] ['] + 22 33
(Dec. 30.5)	^s 37.83 +.07	["] 21.2 -0.9	^s 43.74 +.09	["] 55.6 -0.5	^s 34.96 +.15	["] 28.4 +2.6	^s 46.14 +.11	["] 63.6 0.0
Jan. 9.5	37.88 +.03	20.3 0.8	43.81 +.04	55.2 0.4	35.05 +.03	31.0 2.5	46.22 .06	63.5 0.0
19.4	37.88 -.02	19.6 0.7	43.82 -.01	54.7 0.4	35.01 -.10	33.4 2.4	46.26 +.01	63.6 +0.1
29.4	37.84 .06	18.9 0.6	43.80 .05	54.4 0.3	34.85 .22	35.7 2.1	46.24 -.04	63.6 0.1
Feb. 8.4	37.75 .10	18.3 0.5	43.72 .09	54.2 0.2	34.58 .32	37.7 1.8	46.18 .09	63.8 0.1
18.4	37.64 -.13	17.9 -0.4	43.61 -.13	54.0 -0.2	34.21 -.41	39.4 +1.4	46.07 -.12	63.9 +0.1
28.3	37.49 .15	17.6 0.3	43.47 .15	53.9 0.1	33.76 .47	40.6 1.0	45.93 .15	64.0 0.1
Mar. 10.3	37.33 .17	17.4 -0.2	43.31 .17	53.8 0.1	33.26 .51	41.3 +0.5	45.76 .17	64.1 +0.1
20.3	37.16 .17	17.3 0.0	43.14 .17	53.7 -0.1	32.73 .53	41.6 0.0	45.59 .18	64.1 0.0
30.3	36.99 .16	17.3 +0.1	42.96 .16	53.6 0.0	32.21 .51	41.3 -0.5	45.41 .17	64.1 0.0
Apr. 9.2	36.84 -.14	17.4 +0.2	42.81 -.15	53.6 0.0	31.71 -.47	40.6 -1.0	45.24 -.16	64.0 -0.1
19.2	36.71 .11	17.6 0.3	42.67 .12	53.7 0.0	31.26 .41	39.4 1.4	45.10 .13	63.9 0.1
29.2	36.61 .08	17.9 0.4	42.57 .09	53.7 +0.1	30.89 .33	37.8 1.8	44.98 .10	63.7 0.2
May 9.2	36.55 -.04	18.3 0.5	42.50 .05	53.8 0.2	30.60 .24	35.9 2.1	44.89 .06	63.5 0.2
19.1	36.52 .00	18.9 0.6	42.46 -.01	54.0 0.2	30.42 .13	33.7 2.3	44.85 -.02	63.4 0.2
29.1	36.54 +.04	19.5 +0.7	42.48 +.03	54.3 +0.3	30.34 -.02	31.3 -2.4	44.85 +.02	63.2 -0.2
June 8.1	36.60 .08	20.3 0.8	42.53 .07	54.6 0.4	30.37 +.09	28.8 2.5	44.90 .07	63.0 0.1
18.0	36.70 .12	21.2 0.9	42.63 .11	55.0 0.4	30.52 .20	26.3 2.5	44.98 .11	62.9 -0.1
28.0	36.84 .16	22.1 0.9	42.76 .15	55.4 0.5	30.77 .30	23.8 2.5	45.11 .15	62.9 0.0
July 8.0	37.02 .19	23.0 1.0	42.93 .19	55.9 0.5	31.12 .40	21.4 2.4	45.28 .18	62.9 0.0
18.0	37.22 +.22	24.0 +1.0	43.14 +.22	56.5 +0.5	31.57 +.49	19.1 -2.2	45.48 +.21	62.9 0.0
27.9	37.46 .24	25.0 0.9	43.37 .24	57.0 0.5	32.10 .57	17.0 2.0	45.71 .24	62.9 0.0
Aug. 6.9	37.71 .26	25.8 0.8	43.62 .26	57.5 0.5	32.70 .63	15.2 1.7	45.96 .27	63.0 0.0
16.9	37.98 .28	26.6 0.7	43.89 .28	57.9 0.4	33.37 .69	13.6 1.4	46.24 .29	63.0 0.0
26.8	38.26 .29	27.2 0.5	44.18 .29	58.3 0.3	34.08 .73	12.3 1.1	46.54 .30	63.0 0.0
Sept. 5.8	38.55 +.30	27.6 +0.3	44.48 +.30	58.5 +0.2	34.83 +.76	11.4 -0.8	46.84 +.31	63.0 -0.1
15.8	38.85 .30	27.8 +0.1	44.78 .31	58.6 0.0	35.61 .78	10.8 0.4	47.16 .32	62.8 0.1
25.8	39.15 .30	27.8 -0.1	45.10 .31	58.5 -0.1	36.40 .80	10.6 -0.1	47.49 .33	62.6 0.2
Oct. 5.7	39.45 .30	27.6 0.3	45.41 .31	58.3 0.3	37.20 .79	10.7 +0.3	47.81 .33	62.4 0.3
15.7	39.74 .29	27.2 0.5	45.71 .30	58.0 0.4	37.98 .77	11.2 0.7	48.14 .32	62.0 0.3
25.7	40.03 +.28	26.5 -0.7	46.01 +.29	57.4 -0.5	38.74 +.74	12.0 +1.0	48.46 +.32	61.6 -0.4
Nov. 4.7	40.30 .26	25.7 0.9	46.30 .28	56.8 0.6	39.46 .69	13.2 1.4	48.77 .30	61.2 0.4
14.6	40.55 .24	24.7 1.0	46.57 .26	56.2 0.7	40.12 .63	14.8 1.7	49.06 .28	60.8 0.4
24.6	40.78 .21	23.7 1.1	46.81 .23	55.4 0.7	40.72 .55	16.6 2.0	49.34 .26	60.4 0.4
Dec. 4.6	40.97 .18	22.6 1.1	47.03 .20	54.7 0.7	41.22 .46	18.8 2.2	49.58 .22	60.1 0.3
14.5	41.13 +.14	21.5 -1.1	47.21 +.16	54.0 -0.7	41.62 +.35	21.1 +2.4	49.78 +.18	59.8 -0.2
24.5	41.25 .10	20.4 1.0	47.35 .12	53.4 0.6	41.91 .23	23.6 2.5	49.94 .15	59.6 -0.1
34.5	41.33 +.05	19.5 -1.0	47.44 +.07	52.8 -0.5	42.08 +.10	26.1 +2.6	50.06 +.10	59.5 0.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Argus. (Canopus.)		γ Geminorum.		α Canis Majoris. (Sirius.)		ϵ Canis Majoris.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination South.
	^h ^m 6 21	[°] ['] —52 37	^h ^m 6 31	[°] ['] +16 29	^h ^m 6 40	[°] ['] —16 34	^h ^m 6 54	[°] ['] —28 49
(Dec. 30.5)	42.50 +.01	78.0 —3.6	47.97 +.12	17.6 —0.5	38.67 +.10	24.4 —2.4	36.75 +.10	51.2 —3.0
Jan. 9.5	42.48 —.06	81.5 3.4	48.07 .07	17.1 0.4	38.74 +.05	26.8 2.3	36.83 +.05	54.2 2.9
19.4	42.39 .13	84.7 3.1	48.12 +.02	16.8 0.3	38.76 .00	29.0 2.1	36.85 .00	57.0 2.7
29.4	42.23 .19	87.7 2.7	48.11 —.03	16.5 0.2	38.74 —.05	31.0 1.9	36.82 —.06	59.6 2.4
Feb. 8.4	42.01 .24	90.2 2.3	48.06 .07	16.4 0.1	38.67 .09	32.8 1.6	36.74 .10	61.8 2.1
18.4	41.74 —.29	92.3 —1.9	47.97 —.11	16.3 —0.1	38.56 —.13	34.2 —1.3	36.61 —.14	63.8 —1.7
28.3	41.43 .33	94.0 1.4	47.84 .14	16.2 0.0	38.42 .16	35.4 1.0	36.45 .17	65.3 1.3
Mar. 10.3	41.09 .35	95.1 0.9	47.68 .16	16.2 0.0	38.25 .18	36.2 0.7	36.26 .20	66.5 0.9
20.3	40.74 .36	95.7 —0.3	47.52 .17	16.2 0.0	38.06 .19	36.6 —0.3	36.06 .21	67.2 0.5
30.3	40.38 .35	95.8 +0.2	47.35 .17	16.3 0.0	37.87 .18	36.8 0.0	35.84 .21	67.5 —0.1
Apr. 9.2	40.03 —.34	95.3 +0.7	47.18 —.16	16.3 0.0	37.69 —.17	36.6 +0.3	35.63 —.20	67.4 +0.3
19.2	39.71 .31	94.4 1.2	47.03 .14	16.4 0.0	37.52 .16	36.2 0.6	35.43 .19	66.9 0.7
29.2	39.42 .27	92.9 1.6	46.91 .11	16.4 +0.1	37.37 .13	35.4 0.9	35.25 .16	66.1 1.0
May 9.2	39.17 .23	91.1 2.0	46.82 .07	16.5 0.1	37.26 .10	34.4 1.2	35.10 .13	64.9 1.4
19.1	38.96 .17	88.8 2.4	46.77 —.03	16.6 0.1	37.17 .07	33.1 1.4	34.99 .10	63.3 1.7
29.1	38.82 —.12	86.3 +2.7	46.76 +.01	16.7 +0.2	37.13 —.03	31.6 +1.6	34.91 —.06	61.4 +2.0
June 8.1	38.73 —.06	83.4 2.9	46.78 .05	16.9 0.2	37.12 +.01	29.8 1.8	34.87 —.02	59.4 2.2
18.0	38.70 .00	80.4 3.1	46.85 .09	17.1 0.2	37.15 .05	28.0 1.9	34.87 +.02	57.1 2.4
28.0	38.74 +.06	77.2 3.2	46.96 .13	17.3 0.3	37.22 .09	26.0 2.0	34.91 .06	54.6 2.5
July 8.0	38.83 .12	74.0 3.2	47.10 .16	17.6 0.3	37.32 .12	24.0 2.0	35.00 .10	52.1 2.5
18.0	38.98 +.18	70.8 +3.1	47.28 +.19	17.9 +0.3	37.47 +.16	22.0 +1.9	35.12 +.14	49.6 +2.5
27.9	39.18 .23	67.9 2.9	47.49 .22	18.2 0.3	37.64 .19	20.1 1.8	35.28 .17	47.2 2.3
Aug. 6.9	39.44 .28	65.2 2.5	47.73 .25	18.5 0.2	37.84 .22	18.4 1.6	35.47 .21	45.0 2.1
16.9	39.74 .32	62.8 2.2	47.98 .27	18.7 0.2	38.06 .24	16.9 1.4	35.69 .24	43.0 1.8
26.8	40.08 .35	60.8 1.7	48.26 .28	18.8 +0.1	38.31 .26	15.7 1.0	35.94 .26	41.4 1.5
Sept. 5.8	40.45 +.38	59.4 +1.1	48.55 +.29	18.8 0.0	38.58 +.27	14.8 +0.7	36.21 +.28	40.1 +1.0
15.8	40.85 .40	58.6 +0.5	48.85 .30	18.7 —0.2	38.86 .29	14.3 +0.3	36.50 .30	39.3 +0.6
25.8	41.25 .41	58.3 —0.1	49.16 .31	18.5 0.3	39.15 .29	14.3 —0.1	36.80 .31	39.0 0.0
Oct. 5.7	41.66 .41	58.7 0.7	49.47 .32	18.1 0.5	39.45 .30	14.6 0.5	37.12 .32	39.3 —0.5
15.7	42.07 .40	59.8 1.3	49.79 .32	17.6 0.6	39.74 .30	15.5 1.0	37.43 .32	40.0 1.0
25.7	42.46 +.38	61.4 —1.9	50.10 +.31	16.9 —0.7	40.04 +.29	16.7 —1.4	37.75 +.31	41.3 —1.5
Nov. 4.7	42.83 .35	63.7 2.5	50.41 .30	16.2 0.7	40.33 .28	18.4 1.8	38.06 .30	43.1 2.0
14.6	43.16 .30	66.4 2.9	50.70 .28	15.5 0.8	40.60 .26	20.4 2.1	38.36 .28	45.3 2.4
24.6	43.44 .25	69.5 3.3	50.97 .26	14.7 0.8	40.86 .24	22.6 2.3	38.62 .26	47.8 2.7
Dec. 4.6	43.66 .19	72.9 3.5	51.22 .23	13.9 0.7	41.08 .21	25.0 2.5	38.86 .22	50.7 2.9
14.5	43.83 +.13	76.5 —3.6	51.43 +.19	13.2 —0.7	41.27 +.17	27.6 —2.5	39.06 +.18	53.7 —3.0
24.5	43.92 +.06	80.2 3.6	51.60 .15	12.5 0.6	41.42 .13	30.1 2.5	39.22 .13	56.7 3.0
34.5	43.95 —.01	83.8 —3.5	51.72 +.10	12.0 —0.5	41.52 +.08	32.6 —2.4	39.33 +.09	59.8 —3.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Canis Majoris.		δ Geminorum.		Piazzi vii, 67.		α Geminorum. (Castor.)	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 7 4	° ' " -26 13	h m 7 13	° ' " +22 10	h m 7 20	° ' " +68 40	h m 7 28	° ' " +32 6
(Dec. 30.5)	s	"	s	"	s	"	s	"
Jan. 9.5	14.22 +.11	42.3 -2.9	60.69 +.17	20.4 -0.3	15.59 +.34	33.3 +2.4	4.38 +.19	52.5 +0.3
19.5	14.31 .06	45.2 2.8	60.84 .18	20.1 -0.1	15.87 .22	35.7 2.4	4.55 .14	52.9 0.4
29.5	14.34 +.01	47.9 2.6	60.93 .07	20.1 0.0	16.02 +.09	38.2 2.5	4.66 .08	53.4 0.6
Feb. 8.4	14.33 -.04	50.4 2.4	60.97 +.01	20.1 +0.1	16.04 -.04	40.7 2.5	4.72 +.03	54.0 0.7
18.4	14.26 .09	52.7 2.1	60.95 -.04	20.2 0.2	15.94 .16	43.1 2.3	4.71 -.03	54.7 0.7
28.4	14.15 -.13	54.6 -1.7	60.89 -.08	20.4 +0.2	15.72 -.27	45.3 +2.1	4.66 -.08	55.4 +0.7
Mar. 10.3	14.01 .16	56.1 1.4	60.78 .12	20.7 0.3	15.40 .36	47.2 1.7	4.55 .18	56.2 0.7
20.3	13.83 .19	57.3 1.0	60.64 .15	21.0 0.3	15.00 .43	48.8 1.3	4.41 .16	56.8 0.6
30.3	13.63 .20	58.1 0.6	60.49 .16	21.2 0.2	14.54 .48	49.9 0.9	4.24 .18	57.3 0.5
Apr. 9.3	13.43 .20	58.4 -0.2	60.31 .17	21.4 0.2	14.04 .50	50.6 +0.4	4.05 .19	57.8 0.3
19.2	13.23 -.20	58.4 +0.2	60.14 -.17	21.6 +0.1	13.54 -.50	50.7 -0.1	3.86 -.18	58.0 +0.2
29.2	13.03 .18	58.0 0.6	59.98 .15	21.7 +0.1	13.05 .47	50.4 0.6	3.68 .17	58.1 0.0
May 9.2	12.86 .16	57.3 0.9	59.84 .13	21.7 0.0	12.60 .42	49.6 1.0	3.52 .15	58.0 -0.2
19.1	12.71 .13	56.2 1.3	59.72 .10	21.7 0.0	12.21 .36	48.3 1.4	3.38 .12	57.8 0.3
29.1	12.60 .10	54.7 1.6	59.64 .07	21.6 -0.1	11.89 .28	46.7 1.8	3.28 .08	57.4 0.4
June 8.1	12.52 -.06	53.0 +1.8	59.59 -.03	21.5 -0.1	11.65 -.19	44.8 -2.1	3.21 -.04	56.9 -0.5
18.1	12.47 -.02	51.1 2.0	59.58 +.01	21.4 0.1	11.51 -.09	42.5 2.3	3.19 .00	56.3 0.6
28.0	12.47 +.02	48.9 2.2	59.62 .05	21.2 0.2	11.47 +.01	40.1 2.5	3.21 +.04	55.6 0.7
July 8.0	12.51 .06	46.6 2.3	59.69 .09	21.0 0.2	11.53 .11	37.5 2.6	3.27 .08	54.8 0.8
18.0	12.59 .09	44.3 2.4	59.80 .13	20.8 0.2	11.69 .21	34.8 2.6	3.37 .12	54.0 0.8
28.0	12.70 +.13	41.9 +2.3	59.94 +.16	20.7 -0.2	11.95 +.30	32.2 -2.6	3.51 +.16	53.2 -0.8
Aug. 6.9	12.85 .17	39.6 2.2	60.12 .19	20.4 0.2	12.29 .39	29.6 2.5	3.69 .19	52.4 0.8
16.9	13.03 .20	37.4 2.0	60.32 .22	20.2 0.3	12.72 .47	27.1 2.4	3.90 .22	51.5 0.9
26.9	13.24 .23	35.5 1.8	60.55 .24	19.9 0.3	13.22 .54	24.7 2.2	4.14 .25	50.6 0.9
Sept. 5.9	13.48 .25	33.9 1.4	60.81 .27	19.6 0.4	13.79 .60	22.5 2.0	4.40 .28	49.8 0.9
15.8	13.74 +.27	32.7 +1.0	61.08 +.28	19.1 -0.5	14.42 +.65	20.6 -1.8	4.69 +.30	48.8 -0.9
25.8	14.02 .29	31.9 0.5	61.38 .30	18.6 0.6	15.10 .70	18.9 1.5	5.00 .32	47.9 0.9
Oct. 5.8	14.32 .30	31.6 +0.1	61.69 .31	18.0 0.6	15.82 .73	17.6 1.2	5.33 .34	47.0 0.9
15.7	14.63 .31	31.8 -0.5	62.01 .32	17.3 0.7	16.57 .76	16.6 0.8	5.68 .35	46.1 0.9
25.7	14.94 .32	32.5 1.0	62.34 .33	16.6 0.8	17.34 .77	15.9 0.5	6.04 .36	45.2 0.9
Nov. 4.7	15.26 +.31	33.8 -1.5	62.67 +.33	15.8 -0.8	18.11 +.77	15.6 -0.1	6.40 +.36	44.4 -0.8
14.7	15.57 .30	35.5 1.9	63.00 .33	14.9 0.8	18.87 .75	15.7 +0.3	6.76 .36	43.7 0.7
24.6	15.87 .29	37.6 2.3	63.33 .34	14.1 0.8	19.61 .72	16.3 0.7	7.12 .35	43.0 0.6
Dec. 4.6	16.14 .26	40.1 2.6	63.64 .30	13.3 0.8	20.31 .67	17.2 1.1	7.46 .33	42.5 0.4
14.6	16.39 .25	42.8 2.8	63.93 .27	12.6 0.7	20.94 .60	18.6 1.5	7.78 .31	42.2 0.2
24.6	16.60 +.19	45.7 -2.9	64.18 +.24	12.0 -0.5	21.50 +.51	20.3 +1.9	8.07 +.27	42.0 -0.1
34.5	16.77 .14	48.7 3.0	64.40 .19	11.5 0.4	21.96 .40	22.3 2.1	8.32 .23	42.0 +0.1
	16.89 +.10	51.6 -2.9	64.57 +.15	11.1 -0.2	22.31 +.29	24.5 +2.3	8.53 +.18	42.3 +0.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Canis Minoris. (Procyon.)		β Geminorum. (Pollux.)		ϕ Geminorum.		3 Ursae Majoris (H.)	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 7 33	° ' " + 5 29	h m 7 39	° ' " +28 16	h m 7 47	° ' " +27 1	h m 8 2	° ' " +68 46
(Dec. 30.5)	56.79 +.17	21.4 -1.4	3.32 +.21	29.2 -0.1	14.11 +.21	55.8 -0.1	39.62 +.44	32.7 +2.1
Jan. 9.5	56.94 .12	20.0 1.3	3.49 .13	29.3 +0.1	14.29 .16	55.8 +0.1	40.01 .32	34.9 2.3
19.5	57.04 .07	18.8 1.1	3.62 .09	29.6 0.3	14.42 .10	56.0 0.2	40.27 .20	37.3 2.4
29.5	57.08 +.02	17.8 0.9	3.68 +.04	29.9 0.4	14.50 +.05	56.2 0.4	40.40 +.07	39.8 2.5
Feb. 8.4	57.08 -.02	16.9 0.7	3.69 -.02	30.4 0.5	14.52 -.01	56.6 0.5	40.40 -.06	42.3 2.5
18.4	57.03 -.07	16.3 -0.6	3.64 -.07	31.0 +0.6	14.48 -.06	57.1 +0.5	40.27 -.18	44.8 +2.4
28.4	56.94 .11	15.8 0.4	3.55 .11	31.6 0.6	14.40 .10	57.7 0.6	40.04 .28	47.0 2.1
Mar. 10.3	56.82 .13	15.5 0.2	3.42 .14	32.1 0.5	14.27 .14	58.2 0.5	39.70 .37	49.0 1.8
20.3	56.68 .15	15.3 -0.1	3.26 .17	32.6 0.4	14.12 .16	58.7 0.5	39.29 .44	50.6 1.4
30.3	56.52 .16	15.2 0.0	3.09 .18	33.0 0.4	13.96 .17	59.2 0.4	38.82 .48	51.7 0.9
Apr. 9.3	56.36 -.16	15.3 +0.1	2.91 -.18	33.3 +0.2	13.78 -.17	59.5 +0.3	38.33 -.50	52.4 +0.4
19.2	56.20 .13	15.5 0.2	2.73 .17	33.5 0.1	13.61 .17	59.7 +0.1	37.83 .49	52.6 0.0
29.2	56.06 .15	15.8 0.3	2.57 .15	33.6 +0.0	13.45 .15	59.8 0.0	37.35 .46	52.3 -0.5
May 9.2	55.94 .11	16.1 0.4	2.44 .12	33.5 -0.2	13.32 .12	59.8 -0.1	36.90 .41	51.5 1.0
19.2	55.85 .08	16.6 0.5	2.33 .09	33.2 0.3	13.21 .09	59.7 0.2	36.52 .35	50.3 1.4
29.1	55.79 -.04	17.1 +0.6	2.26 -.05	32.9 -0.4	13.13 -.06	59.4 -0.3	36.20 -.27	48.7 -1.8
June 8.1	55.76 -.01	17.7 0.6	2.23 -.01	32.5 0.4	13.10 -.02	59.1 0.4	35.97 .19	46.7 2.1
18.1	55.77 +.02	18.4 0.7	2.24 +.03	32.0 0.5	13.10 +.02	58.7 0.4	35.83 -.10	44.4 2.5
28.0	55.82 .06	19.0 0.7	2.29 .07	31.5 0.6	13.14 .06	58.2 0.5	35.78 .00	41.9 2.6
July 8.0	55.89 .09	19.8 0.7	2.37 .10	30.9 0.6	13.22 .10	57.7 0.5	35.83 +.09	39.3 2.7
18.0	56.00 +.12	20.4 +0.7	2.50 +.14	30.3 -0.6	13.33 +.13	57.1 -0.6	35.96 +.18	36.5 -2.8
28.0	56.14 .15	21.1 0.6	2.65 .17	29.6 0.7	13.48 .16	56.5 0.6	36.20 .27	33.7 2.8
Aug. 6.9	56.31 .18	21.6 0.5	2.84 .20	28.9 0.7	13.66 .19	55.8 0.7	36.52 .36	30.9 2.8
16.9	56.50 .20	22.1 0.4	3.06 .23	28.2 0.8	13.87 .22	55.1 0.7	36.92 .44	28.2 2.7
26.9	56.72 .23	22.4 +0.2	3.30 .26	27.4 0.8	14.11 .25	54.3 0.8	37.40 .52	25.6 2.5
Sept. 5.9	56.96 +.25	22.5 0.0	3.58 +.28	26.6 -0.9	14.37 +.27	53.5 -0.9	37.94 +.58	23.2 -2.3
15.8	57.22 .27	22.3 -0.2	3.87 .30	25.7 0.9	14.65 .29	52.6 0.9	38.55 .64	20.9 2.1
25.8	57.49 .28	22.0 0.5	4.18 .32	24.8 0.9	14.96 .31	51.6 1.0	39.21 .69	19.0 1.8
Oct. 5.8	57.78 .29	21.4 0.7	4.50 .33	23.8 1.0	15.28 .33	50.6 1.0	39.92 .73	17.3 1.5
15.7	58.08 .30	20.5 1.0	4.84 .34	22.8 1.0	15.62 .34	49.6 1.0	40.66 .75	16.0 1.1
25.7	58.39 +.31	19.4 -1.2	5.19 +.35	21.9 -0.9	15.96 +.35	48.6 -1.0	41.43 +.77	15.1 -0.7
Nov. 4.7	58.70 .31	18.1 1.4	5.55 .35	21.0 0.9	16.31 .35	47.5 1.0	42.20 .77	14.5 -0.3
14.7	59.01 .30	16.7 1.5	5.90 .34	20.1 0.8	16.66 .34	46.6 0.9	42.97 .75	14.5 +0.1
24.6	59.30 .29	15.1 1.6	6.23 .33	19.4 0.7	17.00 .33	45.7 0.8	43.71 .72	14.8 0.6
Dec. 4.6	59.58 .26	13.5 1.6	6.55 .30	18.8 0.5	17.32 .31	45.0 0.6	44.41 .67	15.6 1.0
14.6	59.83 +.23	11.9 -1.6	6.84 +.27	18.3 -0.3	17.62 +.28	44.5 -0.5	45.01 +.59	16.9 +1.4
24.6	60.04 .19	10.3 1.5	7.09 .23	18.1 -0.2	17.87 .24	44.1 0.3	45.59 .49	18.5 1.8
34.5	60.22 +.15	8.9 -1.4	7.30 +.20	18.0 0.0	18.08 +.19	43.9 -0.1	46.04 +.40	20.5 +2.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	15 Argus (ρ).		7 Cancri.		ε Hydræ.		ε Ursæ Majoris.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 8	^m 3	^h 8	^m 26	^h 8	^m 41	^h 8	^m 52
		[°] —24		[°] +20		[°] +6		[°] +48
		['] 0		['] 47		['] 47		['] 26
(Dec. 30.6)	11.35 +.18	22.1 —.29	47.46 +.23	24.8 —.06	21.31 +.23	46.7 —.15	12.41 +.34	37.2 +0.7
Jan. 9.5	11.51 .13	25.1 2.9	47.67 .19	24.2 0.5	21.52 .19	45.3 1.4	12.72 .28	38.0 1.0
19.5	11.61 .08	27.9 2.8	47.84 .14	23.8 0.3	21.68 .14	44.0 1.2	12.96 .21	39.1 1.3
29.5	11.66 +.03	30.6 2.6	47.95 .09	23.6 —0.1	21.80 .09	42.9 1.0	13.14 .14	40.5 1.5
Feb. 8.5	11.66 —.03	33.0 2.3	48.00 +.03	23.6 +0.1	21.86 +.04	42.0 0.8	13.23 +.06	42.2 1.7
18.4	11.61 —.07	35.2 —2.0	48.01 —.02	23.8 +0.3	21.88 —.01	41.3 —0.6	13.26 —.01	43.9 +1.7
28.4	11.52 .11	37.1 1.7	47.96 .07	24.2 0.4	21.85 .05	40.9 0.4	13.21 .07	45.6 1.7
Mar. 10.4	11.39 .14	38.6 1.3	47.88 .10	24.6 0.4	21.77 .09	40.6 —0.2	13.11 .13	47.3 1.6
20.4	11.23 .17	39.7 1.0	47.76 .13	25.0 0.4	21.67 .11	40.5 0.0	12.95 .18	48.8 1.4
30.3	11.05 .18	40.5 0.6	47.61 .15	25.4 0.4	21.54 .13	40.5 +0.1	12.75 .21	50.2 1.2
Apr. 9.3	10.87 —.18	40.9 —0.2	47.46 —.16	25.9 +0.4	21.40 —.24	40.7 +0.2	12.53 —.23	51.2 +0.9
19.3	10.68 .18	41.0 +0.1	47.30 .13	26.3 0.4	21.26 .14	40.9 0.3	12.29 .24	52.0 0.6
29.3	10.51 .17	40.7 0.3	47.15 .14	26.6 0.3	21.12 .13	41.2 0.3	12.06 .23	52.5 +0.3
May 9.2	10.35 .15	40.1 0.8	47.01 .13	26.8 0.2	20.98 .12	41.6 0.4	11.83 .21	52.6 —0.1
19.2	10.22 .12	39.1 1.1	46.90 .11	27.0 +0.1	20.87 .10	42.0 0.4	11.63 .19	52.3 0.4
29.2	10.11 —.09	37.8 +1.4	46.80 —.08	27.1 0.0	20.78 —.08	42.5 +0.5	11.46 —.16	51.7 —0.7
June 8.1	10.03 .06	36.3 1.6	46.74 .04	27.0 0.0	20.71 .05	43.0 0.5	11.32 .12	50.8 1.0
18.1	9.98 —.03	34.6 1.8	46.72 —.01	27.0 —0.1	20.67 —.02	43.5 0.5	11.22 .07	49.6 1.3
28.1	9.97 .00	32.7 2.0	46.72 +.02	26.8 0.2	20.66 +.01	44.0 0.5	11.17 —.03	48.2 1.5
July 8.1	10.00 +.04	30.6 2.1	46.76 .06	26.6 0.2	20.68 .03	44.6 0.5	11.17 +.02	46.5 1.7
18.0	10.05 +.08	28.5 +2.1	46.83 +.09	26.4 —0.3	20.73 +.06	45.0 +0.5	11.21 +.06	44.7 —1.9
28.0	10.15 .11	26.4 2.1	46.93 .12	26.0 0.4	20.81 .09	45.5 0.4	11.29 .11	42.7 2.0
Aug. 7.0	10.27 .14	24.4 1.9	47.06 .15	25.5 0.5	20.92 .12	45.8 0.3	11.42 .15	40.6 2.1
17.0	10.43 .17	22.5 1.7	47.22 .18	25.0 0.6	21.05 .15	46.0 +0.1	11.60 .19	38.5 2.2
26.9	10.62 .20	20.9 1.4	47.41 .20	24.3 0.7	21.21 .18	46.1 0.0	11.81 .23	36.3 2.2
Sept. 5.9	10.83 +.23	19.6 +1.1	47.62 +.23	23.5 —0.8	21.40 +.20	46.0 —0.2	12.07 +.27	34.1 —2.2
15.9	11.08 .26	18.6 0.7	47.87 .25	22.6 1.0	21.62 .23	45.6 0.4	12.36 .31	31.9 2.2
25.8	11.35 .28	18.1 +0.3	48.13 .28	21.6 1.1	21.86 .25	45.1 0.7	12.70 .35	29.8 2.1
Oct. 5.8	11.64 .30	18.1 —0.2	48.42 .30	20.4 1.2	22.12 .27	44.3 0.9	13.06 .38	27.7 2.0
15.8	11.94 .31	18.5 0.7	48.73 .32	19.2 1.3	22.41 .29	43.2 1.1	13.46 .41	25.9 1.8
25.8	12.26 +.32	19.5 —1.2	49.06 +.33	17.9 —1.3	22.71 +.31	42.0 —1.4	13.88 +.43	24.2 —1.6
Nov. 4.7	12.59 .32	20.9 1.6	49.39 .34	16.5 1.4	23.03 .32	40.5 1.5	14.32 .45	22.7 1.3
14.7	12.91 .32	22.8 2.0	49.73 .34	15.1 1.4	23.35 .32	38.9 1.7	14.78 .46	21.5 1.0
24.7	13.22 .30	25.0 2.4	50.08 .33	13.8 1.3	23.67 .32	37.2 1.7	15.24 .45	20.6 0.7
Dec. 4.7	13.51 .28	27.6 2.7	50.40 .32	12.5 1.2	23.98 .30	35.4 1.8	15.68 .44	20.1 —0.3
14.6	13.78 +.25	30.4 —2.8	50.71 +.29	11.4 —1.0	24.28 +.28	33.6 —1.7	16.10 +.41	20.0 +0.1
24.6	14.01 .21	33.3 2.9	50.99 .26	10.5 0.8	24.55 .25	31.9 1.6	16.49 .36	20.2 0.4
34.6	14.19 +.17	36.3 —2.9	51.23 +.22	9.7 —0.5	24.79 +.22	30.4 —1.5	16.83 +.31	20.8 +0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♌ Ursæ Majoris.		♋ Cancr.		♊ Argus.		♈ Draconis (H.)	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	h m 9 1	° ' " +67 32	h m 9 2	° ' " +11 4	h m 9 14	° ' " -58 50	h m 9 22	° ' " +81 46
(Dec. 30.6)	24.83 +.54	59.0 +1.4	12.13 +.26	55.0 -1.4	21.69 +.32	22.8 -3.6	36.05 +1.33	40.3 +1.8
Jan. 9.6	25.32 .44	60.7 1.8	12.37 .21	53.7 1.2	21.97 .25	26.5 3.8	37.27 1.20	42.3 2.2
19.6	25.70 .33	62.7 2.2	12.56 .16	52.6 1.0	22.18 .17	30.3 3.9	38.25 .83	44.7 2.5
29.5	25.97 .21	65.0 2.4	12.69 .11	51.7 0.8	22.30 +.03	34.2 3.9	38.94 .54	47.4 2.8
Feb. 8.5	26.12 +.08	67.5 2.5	12.78 .06	51.0 0.5	22.34 .00	38.1 3.8	39.32 +.23	50.3 2.9
18.5	26.14 -.04	70.1 +2.5	12.82 +.01	50.6 -0.3	22.30 -.08	41.7 -3.6	39.39 -.08	53.3 +3.0
28.4	26.04 .15	72.6 2.4	12.81 -.03	50.4 -0.1	22.18 .15	45.2 3.3	39.15 .38	56.2 2.8
Mar. 10.4	25.84 .25	74.9 2.2	12.75 .07	50.3 0.0	22.00 .21	48.3 3.0	38.62 .65	59.0 2.6
20.4	25.54 .33	77.0 1.9	12.66 .10	50.4 +0.1	21.76 .26	51.1 2.6	37.84 .88	61.4 2.3
30.4	25.18 .39	78.8 1.6	12.55 .12	50.6 0.2	21.47 .30	53.5 2.1	36.84 1.07	63.5 1.9
Apr. 9.3	24.76 -.43	80.2 +1.2	12.42 -.13	50.9 +0.3	21.15 -.33	55.4 -1.7	35.68 -1.22	65.2 +1.4
19.3	24.30 .45	81.1 0.7	12.28 .14	51.3 0.4	20.80 .35	56.8 1.2	34.40 1.31	66.3 0.9
29.3	23.84 .45	81.5 +0.2	12.14 .13	51.6 0.4	20.45 .36	57.8 0.7	33.06 1.34	66.9 +0.3
May 9.3	23.40 .43	81.5 -0.3	12.01 .12	52.0 0.4	20.09 .35	58.2 -0.2	31.70 1.32	66.9 -0.3
19.2	22.98 .40	80.9 0.8	11.89 .11	52.4 0.4	19.75 .34	58.1 +0.4	30.39 1.26	66.4 0.8
29.2	22.60 -.35	80.0 -1.2	11.79 -.09	52.8 +0.4	19.42 -.31	57.5 +0.9	29.17 -1.16	65.3 -1.4
June 8.2	22.28 .28	78.5 1.6	11.72 .06	53.2 0.4	19.12 .28	56.4 1.3	28.06 1.02	63.6 1.9
18.1	22.03 .21	76.7 2.0	11.66 .04	53.5 0.3	18.85 .24	54.8 1.7	27.12 .85	61.6 2.3
28.1	21.86 .13	74.5 2.3	11.64 -.01	53.9 0.3	18.63 .20	52.9 2.1	26.36 .66	59.1 2.7
July 8.1	21.76 -.05	72.1 2.6	11.64 +.02	54.1 0.2	18.45 .15	50.6 2.5	25.80 .45	56.3 3.0
18.1	21.75 +.03	69.4 -2.8	11.68 +.05	54.4 +0.2	18.33 -.09	47.9 +2.7	25.46 -.23	53.2 -3.2
28.0	21.82 .11	66.5 2.9	11.74 .07	54.5 +0.1	18.27 -.03	45.1 2.9	25.34 -.01	49.9 3.4
Aug. 7.0	21.97 .19	63.6 3.0	11.83 .10	54.5 0.0	18.27 +0.3	42.2 2.9	25.45 +.22	46.4 3.5
17.0	22.20 .27	60.6 3.0	11.95 .13	54.4 -0.2	18.33 .20	39.3 2.9	25.78 .45	42.9 3.3
27.0	22.51 .35	57.6 3.0	12.09 .16	54.2 0.3	18.46 .17	36.4 2.7	26.34 .67	39.4 3.4
Sept. 5.9	22.89 +.43	54.6 -2.9	12.27 +.19	53.8 -0.5	18.66 +.23	33.8 +2.5	27.12 +.87	36.0 -3.3
15.9	23.35 .49	51.8 2.7	12.47 .21	53.2 0.7	18.93 .30	31.5 2.1	28.09 1.07	32.8 3.2
25.9	23.87 .55	49.1 2.5	12.70 .24	52.4 0.9	19.26 .36	29.5 1.7	29.26 1.25	29.7 2.9
Oct. 5.8	24.45 .61	46.7 2.3	12.95 .27	51.4 1.1	19.64 .41	28.1 1.1	30.60 1.41	26.9 2.6
15.8	25.08 .66	44.6 2.0	13.23 .29	50.2 1.3	20.07 .45	27.2 +0.6	32.08 1.55	24.5 2.2
25.8	25.76 +.69	42.8 -1.6	13.53 +.31	48.8 -1.5	20.55 +.49	27.0 -0.1	33.70 +1.66	22.5 -1.8
Nov. 4.8	26.47 .72	41.3 1.2	13.84 .32	47.3 1.6	21.05 .50	27.3 0.7	35.40 1.74	20.9 1.3
14.7	27.20 .73	40.3 0.8	14.17 .33	45.6 1.7	21.56 .51	28.4 1.4	37.16 1.77	19.8 0.8
24.7	27.93 .72	39.8 -0.3	14.51 .33	43.9 1.7	22.06 .49	30.0 2.0	38.94 1.77	19.3 -0.2
Dec. 4.7	28.64 .69	39.8 +0.2	14.83 .32	42.1 1.7	22.54 .46	32.3 2.5	40.69 1.71	19.3 +0.3
14.7	29.32 +.65	40.2 +0.7	15.14 +.30	40.4 -1.6	22.99 +.42	35.1 -3.0	42.36 +1.60	20.0 +0.9
24.6	29.93 .58	41.2 2.2	15.43 .27	38.9 1.5	23.39 .36	38.3 3.4	43.89 1.44	21.1 1.4
34.6	30.47 +.50	42.6 +2.7	15.69 +.24	37.4 -1.3	23.72 +.30	41.8 -3.7	45.24 +1.24	22.8 +2.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Hydræ.		δ Ursæ Majoris.		δ Ursæ Majoris.		ϵ Leonis.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 9 22	° ' " — 8 12	h m 9 25	° ' " +70 16	h m 9 25	° ' " +52 8	h m 9 40	° ' " +24 14
(Dec. 30.6)	33.26 +.23	43.3 —2.4	27.67 +.63	45.1 +1.3	61.12 +.40	36.2 +.05	2.35 +.30	46.6 —0.9
Jan. 9.6	33.50 .21	45.5 .23	28.26 .33	46.6 1.8	61.48 .33	36.9 0.9	2.63 .26	45.8 0.6
19.6	33.69 .17	47.8 2.2	28.74 .42	48.6 2.1	61.79 .26	38.0 1.3	2.87 .21	45.3 —0.3
29.5	33.84 .12	49.9 2.0	29.09 .29	50.9 2.4	62.01 .19	39.5 1.6	3.06 .16	45.1 0.0
Feb. 8.5	33.93 .07	51.8 1.7	29.31 .15	53.4 2.6	62.17 .11	41.2 1.8	3.19 .11	45.2 +0.2
18.5	33.98 +.02	53.4 —1.5	29.39 +.01	56.1 +2.7	62.24 +.03	43.1 +1.9	3.27 +.05	45.5 +0.4
28.4	33.98 —.02	54.8 1.2	29.33 —.12	58.8 2.6	62.23 —.04	45.1 2.0	3.30 .00	46.1 0.6
Mar. 10.4	33.94 .06	55.9 1.0	29.15 .23	61.3 2.5	62.16 .11	47.0 1.9	3.28 —.04	46.8 0.7
20.4	33.86 .09	56.7 0.7	28.86 .33	63.7 2.2	62.02 .16	48.9 1.8	3.21 .08	47.6 0.8
30.4	33.76 .11	57.4 0.5	28.48 .42	65.7 1.8	61.84 .20	50.6 1.6	3.12 .11	48.4 0.8
Apr. 9.3	33.64 —.13	57.7 —0.2	28.03 —.47	67.4 +1.4	61.61 —.23	52.0 +1.3	3.00 —.13	49.2 +0.8
19.3	33.50 .13	57.8 0.0	27.53 .51	68.6 1.0	61.37 .25	53.1 1.0	2.86 .14	50.0 0.7
29.3	33.37 .13	57.8 +0.2	27.01 .52	69.3 +0.5	61.11 .23	53.9 0.6	2.71 .14	50.6 0.6
May 9.3	33.24 .13	57.5 0.4	26.48 .51	69.5 0.0	60.86 .25	54.3 +0.2	2.57 .14	51.2 0.5
19.2	33.11 .12	57.0 0.6	25.98 .49	69.2 —0.5	60.62 .23	54.3 —0.2	2.44 .13	51.6 0.3
29.2	33.00 —.10	56.4 +0.7	25.51 —.44	68.4 —1.0	60.40 —.20	53.9 —0.6	2.32 —.11	51.9 +0.2
June 8.2	32.91 .08	55.6 0.9	25.10 .38	67.2 1.5	60.22 .17	53.1 0.9	2.21 .09	52.0 0.0
18.1	32.84 .06	54.7 1.0	24.76 .31	65.5 1.9	60.07 .13	52.0 1.3	2.13 .07	52.0 —0.1
28.1	32.80 .03	53.6 1.1	24.49 .23	63.4 2.3	59.96 .09	50.6 1.6	2.08 .04	51.8 0.3
July 8.1	32.78 —.01	52.6 1.1	24.30 .14	60.9 2.6	59.90 —.04	48.9 1.8	2.05 —.01	51.4 0.4
18.1	32.78 +.02	51.4 +1.1	24.21 —.05	58.2 —2.8	59.88 +.01	47.0 —2.0	2.05 +.01	50.9 —0.6
28.0	32.82 .05	50.3 1.1	24.20 +.04	55.3 3.0	59.91 .05	44.8 2.2	2.08 .04	50.3 0.7
Aug. 7.0	32.87 .07	49.2 1.0	24.29 .13	52.2 3.1	59.99 .10	42.5 2.4	2.14 .07	49.5 0.9
17.0	32.96 .10	48.2 0.9	24.46 .22	49.1 3.2	60.11 .15	40.0 2.5	2.22 .10	48.6 1.0
27.0	33.08 .13	47.4 0.7	24.73 .31	45.9 3.2	60.29 .20	37.5 2.5	2.34 .13	47.5 1.2
Sept. 5.9	33.22 +.16	46.8 +0.5	25.09 +.40	42.7 —3.1	60.50 +.24	34.9 —2.6	2.48 +.16	46.2 —1.3
15.9	33.40 .19	46.4 +0.2	25.53 .48	39.6 3.0	60.77 .29	32.3 2.6	2.66 .19	44.8 1.5
25.9	33.60 .22	46.3 —0.1	26.05 .56	36.6 2.8	61.07 .33	29.8 2.5	2.87 .23	43.3 1.6
Oct. 5.8	33.84 .25	46.6 0.5	26.64 .63	33.9 2.6	61.42 .37	27.4 2.4	3.12 .26	41.6 1.7
15.8	34.10 .27	47.2 0.8	27.30 .69	31.4 2.3	61.81 .41	25.0 2.2	3.39 .29	39.9 1.8
25.8	34.39 +.30	48.2 —1.2	28.02 +.74	29.3 —1.9	62.24 +.44	22.9 —2.0	3.69 +.31	38.0 —1.8
Nov. 4.8	34.70 .31	49.6 1.5	28.79 .78	27.6 1.5	62.69 .46	21.0 1.7	4.01 .33	36.2 1.8
14.7	35.02 .32	51.2 1.8	29.58 .80	26.3 1.0	63.16 .48	19.5 1.4	4.36 .35	34.3 1.8
24.7	35.34 .33	53.1 2.0	30.40 .81	25.4 —0.5	63.65 .48	18.3 1.0	4.71 .36	32.6 1.7
Dec. 4.7	35.67 .32	55.3 2.2	31.20 .79	25.2 0.0	64.13 .47	17.4 0.6	5.07 .35	30.9 1.5
14.7	35.98 +.30	57.6 —2.3	31.97 +.74	25.4 +0.5	64.60 +.45	17.0 —0.2	5.42 +.34	29.5 —1.3
24.6	36.27 .27	59.9 2.4	32.68 .68	26.2 1.0	65.04 .42	17.1 +0.3	5.75 .32	28.2 1.1
34.6	36.53 +.24	62.3 —2.3	33.32 +.61	27.4 +1.5	65.43 +.38	17.5 +0.7	6.05 +.29	27.3 —0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	μ Leonis.		α Leonis. (Regulus.)		32 Ursæ Majoris.		γ^1 Leonis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h ^m 9 46	[°] ['] +26 29	^h ^m 10 2	[°] ['] +12 27	^h ^m 10 10	[°] ['] +65 36	^h ^m 10 14	[°] ['] +20 21
(Dec. 30.6)	^s 56.41 +.31	" 22.7 -0.8	^s 54.95 +.30	" 68.0 -1.6	^s 37.20 +.58	" 62.1 +0.7	^s 19.44 +.31	" 36.5 -1.3
Jan. 9.6	56.70 .27	22.0 0.5	55.23 .26	66.5 1.4	37.76 .32	63.0 1.1	19.74 .28	35.3 1.0
19.6	56.95 .22	21.6 -0.2	55.47 .22	65.3 1.1	38.25 .44	64.3 1.6	20.01 .24	34.4 0.7
29.6	57.15 .17	21.5 +0.1	55.67 .17	64.3 0.8	38.64 .34	66.2 2.0	20.22 .19	33.9 0.4
Feb. 8.5	57.29 .12	21.7 0.3	55.82 .12	63.6 0.6	38.93 .23	68.4 2.3	20.39 .14	33.6 -0.1
18.5	57.38 +.06	22.2 +0.6	55.92 +.07	63.2 -0.3	39.11 +.12	70.8 +2.5	20.50 +.09	33.7 +0.2
28.5	57.42 +.01	22.9 0.7	55.96 +.02	63.0 -0.1	39.17 +.02	73.3 2.6	20.57 +.04	34.0 0.4
Mar. 10.5	57.40 -0.04	23.7 0.9	55.97 -0.02	63.0 +0.1	39.13 -0.09	76.0 2.6	20.58 .00	34.4 0.6
20.4	57.34 .08	24.6 0.9	55.93 .05	63.2 0.3	38.99 .18	78.5 2.4	20.55 -0.04	35.1 0.7
30.4	57.25 .11	25.5 0.9	55.86 .08	63.6 0.4	38.77 .26	80.8 2.2	20.49 .08	35.8 0.8
Apr. 9.4	57.13 -0.13	26.5 +0.9	55.76 -0.10	64.0 +0.5	38.47 -0.32	82.8 +1.9	20.40 -0.10	36.6 +0.8
19.3	56.99 .14	27.3 0.8	55.65 .12	64.5 0.5	38.12 .37	84.5 1.5	20.29 .12	37.4 0.8
29.3	56.84 .14	28.1 0.7	55.53 .12	65.1 0.5	37.74 .40	85.8 1.1	20.16 .12	38.2 0.7
May 9.3	56.70 .14	28.7 0.5	55.40 .12	65.6 0.5	37.33 .40	86.6 0.6	20.04 .12	38.9 0.6
19.3	56.56 .13	29.1 0.4	55.28 .12	66.1 0.5	36.92 .40	87.0 +0.1	19.91 .12	39.5 0.5
29.2	56.43 -0.12	29.4 +0.2	55.17 -0.10	66.6 +0.4	36.53 -0.38	86.8 -0.4	19.79 -0.11	39.9 +0.4
June 8.2	56.33 .10	29.5 0.0	55.08 .09	67.0 0.4	36.17 .35	86.2 0.9	19.69 .10	40.2 0.3
18.2	56.24 .07	29.4 -0.2	55.00 .07	67.4 0.3	35.84 .30	85.0 1.3	19.59 .08	40.4 +0.1
28.2	56.18 .05	29.1 0.3	54.93 .05	67.7 0.2	35.57 .25	83.5 1.7	19.52 .06	40.5 0.0
July 8.1	56.14 -0.02	28.7 0.5	54.89 .03	67.9 +0.2	35.35 .19	81.5 2.1	19.47 .04	40.4 -0.2
18.1	56.14 +.01	28.1 -0.7	54.87 -0.01	68.0 0.0	35.19 -0.13	79.2 -2.4	19.44 -0.01	40.1 -0.3
28.1	56.16 .03	27.3 0.9	54.88 +.02	68.0 -0.1	35.09 -0.06	76.6 2.7	19.44 +.01	39.7 0.5
Aug. 7.0	56.20 .06	26.4 1.0	54.90 .04	67.8 0.2	35.06 +.01	73.8 2.9	19.46 .04	39.1 0.7
17.0	56.28 .09	25.3 1.2	54.97 .07	67.6 0.4	35.10 .08	70.8 3.1	19.51 .06	38.4 0.8
27.0	56.39 .13	24.1 1.3	55.05 .10	67.1 0.5	35.22 .15	67.6 3.2	19.59 .09	37.4 1.0
Sept. 6.0	56.53 +.16	22.7 -1.5	55.17 +.13	66.5 -0.7	35.40 +.22	64.3 -3.3	19.69 +.12	36.3 -1.2
15.9	56.71 .19	21.1 1.6	55.31 .16	65.7 0.9	35.66 .29	61.1 3.2	19.83 .15	35.0 1.4
25.9	56.91 .23	19.5 1.7	55.49 .19	64.6 1.1	35.99 .36	57.8 3.2	20.00 .19	33.6 1.6
Oct. 5.9	57.15 .26	17.7 1.8	55.70 .23	63.4 1.3	36.39 .43	54.7 3.0	20.21 .22	31.9 1.7
15.9	57.42 .29	15.8 1.9	55.94 .26	62.0 1.5	36.86 .50	51.8 2.8	20.45 .26	30.1 1.8
25.8	57.72 +.31	13.9 -1.9	56.21 +.28	60.4 -1.7	37.39 +.56	49.1 -2.5	20.73 +.29	28.2 -1.9
Nov. 4.8	58.05 .34	12.0 1.9	56.51 .31	58.6 1.8	37.98 .60	46.7 2.2	21.03 .31	26.2 2.0
14.8	58.40 .35	10.1 1.8	56.83 .33	56.7 1.9	38.60 .64	44.7 1.8	21.35 .33	24.2 2.0
24.7	58.76 .36	8.3 1.7	57.16 .34	54.8 2.0	39.26 .66	43.2 1.3	21.70 .35	22.2 1.9
Dec. 4.7	59.12 .36	6.6 1.5	57.50 .34	52.8 1.9	39.93 .67	42.1 0.8	22.05 .35	20.3 1.8
14.7	59.47 +.35	5.2 -1.3	57.83 +.33	50.9 -1.8	40.60 +.65	41.6 -0.2	22.40 +.35	18.5 -1.7
24.7	59.81 .32	4.0 1.0	58.16 .31	49.1 1.7	41.24 .62	41.6 +0.3	22.74 .33	16.9 1.5
34.6	60.12 +.29	3.1 -0.7	58.46 +.28	47.5 -1.6	41.83 +.57	42.1 +0.8	23.05 +.30	15.6 -1.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	9 Draconis. (H.)		ρ Leonis.		γ Argus.		ι Leonis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	h m 10 26	° ' " +76 13	h m 10 27	° ' " + 9 49	h m 10 41	° ' " -59 8	h m 10 43	° ' " +11 4
(Dec. 30.6)	26.94+ .98	77.4 +0.8	24.90 +.31	65.2 -1.8	4.98 +.46	22.7 -2.9	52.14 +.32	77.2 -1.7
Jan. 9.6	27.86 .87	78.5 1.4	25.19 .28	63.5 1.6	5.41 .40	25.8 3.3	52.45 .29	75.5 1.6
19.6	28.67 .74	80.1 1.9	25.45 .24	62.0 1.3	5.78 .34	29.2 3.6	52.72 .25	74.1 1.3
29.6	29.33 .58	82.2 2.3	25.67 .19	60.8 1.1	6.08 .26	32.9 3.7	52.95 .21	72.9 1.0
Feb. 8.5	29.83 .41	84.6 2.6	25.84 .13	59.9 0.8	6.31 .18	36.7 3.8	53.14 .16	72.0 0.7
18.5	30.14+ .22	87.3 +2.8	25.96 +.10	59.3 -0.5	6.45 +.11	40.5 -3.8	53.28 +.11	71.4 -0.4
28.5	30.27+ .04	90.2 2.9	26.03 .05	58.9 -0.3	6.52 +.03	44.2 3.7	53.37 .07	71.1 -0.2
Mar. 10.5	30.21- .14	93.1 2.8	26.06 +.01	58.8 0.0	6.51 -0.4	47.8 3.5	53.41 +.02	71.0 0.0
20.4	29.98 .31	95.9 2.7	26.04 -0.03	58.8 +0.2	6.44 .10	51.2 3.2	53.41 -0.02	71.2 +0.2
30.4	29.60 .46	98.5 2.4	26.00 .06	59.1 0.3	6.30 .16	54.3 2.9	53.38 .05	71.5 0.4
Apr. 9.4	29.08- .57	100.8 +2.1	25.92 -0.08	59.4 +0.4	6.12 -0.21	57.0 -2.5	53.32 -0.07	71.9 +0.5
19.4	28.45 .67	102.7 1.7	25.83 .10	59.9 0.5	5.89 .24	59.4 2.1	53.23 .09	72.5 0.6
29.3	27.74 .73	104.1 1.2	25.72 .11	60.4 0.5	5.63 .27	61.3 1.7	53.13 .10	73.1 0.6
May 9.3	26.99 .76	105.1 0.7	25.60 .11	61.0 0.5	5.34 .29	62.8 1.2	53.02 .11	73.7 0.6
19.3	26.22 .77	105.4 +0.1	25.49 .11	61.5 0.5	5.04 .39	63.8 0.7	52.91 .11	74.3 0.6
29.3	25.46- .73	105.3 -0.4	25.38 -0.10	62.1 +0.5	4.73 -0.31	64.3 -0.2	52.80 -0.11	74.9 +0.6
June 8.2	24.73 .70	104.6 1.0	25.28 .09	62.6 0.5	4.42 .39	64.2 +0.3	52.70 .10	75.4 0.5
18.2	24.05 .64	103.3 1.5	25.19 .08	63.0 0.4	4.12 .29	63.7 0.8	52.61 .08	75.9 0.4
28.2	23.45 .56	101.6 1.9	25.12 .06	63.4 0.4	3.84 .27	62.7 1.2	52.53 .07	76.3 0.3
July 8.1	22.94 .46	99.4 2.3	25.06 .04	63.7 0.3	3.58 .24	61.3 1.6	52.47 .05	76.6 0.2
18.1	22.53- .35	96.9 -2.7	25.03 -0.02	64.0 +0.2	3.36 -0.20	59.4 +2.0	52.42 -0.04	76.7 +0.1
28.1	22.24 .24	94.0 3.0	25.02 .00	64.1 +0.1	3.18 .16	57.2 2.3	52.39 -0.02	76.8 -0.1
Aug. 7.1	22.06- .12	90.9 3.3	25.02 +0.02	64.1 -0.1	3.04 .11	54.8 2.6	52.39 .00	76.7 0.2
17.0	22.01+ .01	87.5 3.4	25.06 .05	63.9 0.2	2.96 -0.05	52.1 2.7	52.40 +0.03	76.5 0.3
27.0	22.08 .14	84.0 3.5	25.12 .08	63.6 0.4	2.95 +0.02	49.3 2.8	52.44 .06	76.1 0.5
Sept. 6.0	22.29+ .27	80.4 -3.6	25.20 +.11	63.1 -0.6	3.00 +0.09	46.5 +2.7	52.52 +0.09	75.5 -0.7
16.0	22.62 .40	76.8 3.6	25.32 .14	62.4 0.8	3.13 .16	43.9 2.5	52.62 .12	74.7 0.9
25.9	23.08 .52	73.3 3.5	25.48 .17	61.5 1.0	3.33 .24	41.5 2.3	52.76 .15	73.7 1.1
Oct. 5.9	23.67 .65	69.9 3.3	25.66 .20	60.3 1.3	3.60 .31	39.4 1.9	52.93 .19	72.4 1.4
15.9	24.38 .76	66.7 3.0	25.88 .24	58.9 1.5	3.94 .37	37.7 1.4	53.14 .23	71.0 1.6
25.8	25.19+ .86	63.9 -2.7	26.14 +.27	57.4 -1.7	4.35 +.43	36.5 +0.9	53.38 +.26	69.3 -1.8
Nov. 4.8	26.10 .95	61.3 2.3	26.42 .30	55.6 1.9	4.81 .48	35.9 +0.3	53.66 .29	67.4 1.9
14.8	27.09 1.02	59.3 1.8	26.73 .32	53.7 2.0	5.31 .52	35.9 -0.3	53.96 .31	65.5 2.0
24.8	28.13 1.06	57.7 1.3	27.06 .33	51.7 2.0	5.84 .53	36.5 0.9	54.28 .33	63.4 2.1
Dec. 4.7	29.21 1.08	56.6 0.8	27.40 .34	49.6 2.0	6.38 .53	37.8 1.5	54.62 .34	61.3 2.1
14.7	30.28+1.06	56.1 -0.2	27.74 +.33	47.6 -2.0	6.91 +.52	39.6 -2.1	54.96 +.34	59.2 -2.0
24.7	31.33 1.01	56.3 +0.4	28.06 .32	45.6 1.9	7.42 .49	42.0 2.6	55.29 .33	57.3 1.9
34.6	32.30+ .93	57.0 +0.9	28.37 +.30	43.8 -1.7	7.88 +.45	44.9 -3.0	55.61 +.31	55.4 -1.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Majoris.		δ Leonis.		δ Crateris.		ϵ Leonis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	^h ^m 10 57	[°] ['] +62 17	^h ^m 11 8	[°] ['] +21 4	^h ^m 11 14	[°] ['] -14 13	^h ^m 11 22	[°] ['] + 3 24
(Dec. 30.7)	25.25 +.58	65.5 -0.1	39.36 +.34	65.2 -1.5	12.59 +.33	17.0 -2.4	39.62 +.33	78.0 -2.1
Jan. 9.7	25.80 .52	65.7 +0.5	39.68 .32	63.7 1.3	12.90 .30	19.5 2.5	39.94 .36	76.0 2.0
19.6	26.30 .46	66.4 1.0	39.98 .28	62.6 0.9	13.19 .27	22.0 2.4	40.23 .27	74.1 1.8
29.6	26.73 .39	67.7 1.5	40.25 .24	61.9 0.6	13.44 .23	24.4 2.3	40.48 .23	72.5 1.5
Feb. 8.6	27.08 .30	69.5 1.9	40.47 .19	61.5 -0.2	13.64 .18	26.6 2.2	40.70 .19	71.1 1.2
18.5	27.33 +.21	71.6 +2.3	40.64 +.15	61.4 +0.1	13.80 +.14	28.7 -2.0	40.87 +.15	70.0 -1.0
28.5	27.49 .11	74.0 2.5	40.76 .10	61.7 0.4	13.92 .09	30.5 1.7	41.00 .11	69.1 0.7
Mar. 10.5	27.55 +.02	76.5 2.6	40.83 .05	62.2 0.6	13.99 .05	32.2 1.5	41.08 .06	68.6 0.4
20.5	27.52 -0.7	79.1 2.6	40.85 +0.1	62.9 0.8	14.02 +0.1	33.5 1.3	41.12 +0.2	68.3 -0.2
30.4	27.41 .15	81.7 2.4	40.84 -0.3	63.8 0.9	14.02 -0.2	34.7 1.0	41.12 -0.1	68.2 0.0
Apr. 9.4	27.22 -0.22	84.0 +2.2	40.79 -0.06	64.8 +1.0	13.98 -0.05	35.5 -0.7	41.10 -0.2	68.3 +0.2
19.4	26.98 .27	86.1 1.9	40.72 .08	65.9 1.0	13.92 .07	36.1 0.5	41.05 .06	68.5 0.3
29.3	26.68 .31	87.9 1.6	40.63 .10	66.9 1.0	13.84 .08	36.5 0.3	40.98 .08	68.9 0.4
May 9.3	26.36 .33	89.3 1.2	40.52 .11	67.8 0.9	13.75 .09	36.7 -0.1	40.89 .09	69.4 0.5
19.3	26.02 .34	90.2 0.7	40.40 .11	68.7 0.8	13.65 .10	36.6 +0.1	40.80 .09	69.9 0.5
29.3	25.68 -0.34	90.7 +0.2	40.29 -0.11	69.4 +0.6	13.55 -0.10	36.4 +0.3	40.71 -0.10	70.5 +0.6
June 8.2	25.34 .33	90.7 -0.3	40.18 .11	70.0 0.5	13.44 .10	35.9 0.5	40.61 .10	71.1 0.6
18.2	25.02 .30	90.2 0.8	40.07 .10	70.4 0.3	13.34 .10	35.3 0.7	40.51 .09	71.6 0.6
28.2	24.73 .27	89.2 1.2	39.97 .09	70.6 +0.1	13.24 .09	34.6 0.8	40.42 .08	72.2 0.5
July 8.2	24.48 .23	87.7 1.6	39.89 .08	70.6 -0.1	13.16 .08	33.7 0.9	40.34 .07	72.7 0.5
18.1	24.27 -0.19	85.9 -2.0	39.82 -0.06	70.4 -0.3	13.09 -0.07	32.7 +1.0	40.27 -0.06	73.2 +0.4
28.1	24.10 .14	83.7 2.4	39.77 .04	70.1 0.5	13.03 .05	31.6 1.1	40.22 .05	73.6 0.3
Aug. 7.1	23.98 .09	81.2 2.7	39.74 -0.02	69.5 0.7	12.98 .03	30.5 1.1	40.18 .03	73.9 0.2
17.0	23.92 -0.03	78.4 2.9	39.73 +0.1	68.7 0.9	12.96 -0.01	29.5 1.0	40.16 -0.01	74.1 +0.1
27.0	23.92 +0.03	75.3 3.1	39.75 .03	67.7 1.1	12.97 +0.02	28.5 0.9	40.16 +0.02	74.1 -0.1
Sept. 6.0	23.99 +0.10	72.1 -3.3	39.79 +0.06	66.5 -1.3	13.01 +0.05	27.6 +0.8	40.19 +0.05	73.9 -0.3
15.9	24.11 .16	68.8 3.4	39.87 .10	65.1 1.5	13.08 .09	26.9 0.6	40.26 .08	73.6 0.5
25.9	24.31 .23	65.4 3.4	39.99 .13	63.5 1.7	13.18 .13	26.5 +0.3	40.36 .12	73.0 0.7
Oct. 5.9	24.57 .30	62.0 3.3	40.14 .17	61.7 1.9	13.33 .16	26.3 0.0	40.49 .15	72.1 1.0
15.9	24.90 .37	58.8 3.2	40.33 .21	59.7 2.1	13.51 .20	26.4 -0.3	40.66 .19	71.0 1.2
25.9	25.30 +.43	55.6 -3.0	40.56 +.25	57.5 -2.2	13.74 +.24	26.9 -0.7	40.87 +.23	69.6 -1.5
Nov. 4.8	25.76 .48	52.7 2.7	40.83 .28	55.3 2.3	14.00 .28	27.8 1.0	41.12 .26	68.0 1.7
14.8	26.27 .53	50.1 2.4	41.13 .31	53.0 2.3	14.29 .31	29.0 1.4	41.40 .29	66.2 1.9
24.8	26.83 .57	47.9 2.0	41.45 .33	50.7 2.2	14.61 .33	30.6 1.7	41.71 .32	64.2 2.1
Dec. 4.7	27.41 .59	46.2 1.5	41.80 .35	48.6 2.1	14.94 .34	32.4 2.0	42.03 .33	62.1 2.1
14.7	28.01 +.60	44.9 -1.0	42.15 +.35	46.5 -2.0	15.29 +.34	34.6 -2.2	42.37 +.34	59.9 -2.2
24.7	28.60 .58	44.2 -0.4	42.50 .35	44.6 1.8	15.63 .33	36.9 2.4	42.71 .33	57.7 2.2
34.7	29.18 +.56	44.1 +0.1	42.84 +.34	43.0 -1.5	15.96 +.32	39.3 -2.5	43.03 +.32	55.6 -2.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	λ Draconia.		ϵ Leonis.		β Leonis.		γ Ursæ Majoris.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h ^m 11 25	[°] ['] +69 53	^h ^m 11 31	[°] ['] — 0 15	^h ^m 11 43	[°] ['] +15 8	^h ^m 11 48	[°] ['] +54 15
(Dec. 30.7)	^s 20.54 +.76	^s 35.8 —0.2	^s 41.62 +.33	^s 24.0 —2.2	^s 49.56 +.34	^s 41.1 —1.9	^s 26.76 +.49	^s 40.8 —1.0
Jan. 9.7	21.27 .71	35.9 +0.4	41.94 .31	26.1 2.1	49.89 .32	39.3 1.6	27.24 .47	40.1 —0.4
19.6	21.94 .64	36.6 1.0	42.24 .28	28.1 1.9	50.20 .29	37.8 1.3	27.69 .43	40.0 +0.2
29.6	22.54 .35	37.9 1.6	42.50 .24	29.9 1.7	50.48 .26	36.6 1.0	28.10 .38	40.5 0.8
Feb. 8.6	23.04 .43	39.7 2.0	42.72 .20	31.5 1.5	50.72 .22	35.8 0.7	28.46 .32	41.5 1.3
18.5	23.42 +.32	42.0 +2.4	42.90 +.16	32.9 —1.2	50.92 +.17	35.3 —0.3	28.75 +.25	43.0 +1.7
28.5	23.68 .20	44.5 2.7	43.04 .11	33.9 0.9	51.07 .13	35.1 0.0	28.97 .18	44.9 2.0
Mar. 10.5	23.82 +.07	47.3 2.8	43.13 .07	34.7 0.7	51.17 .08	35.3 +0.3	29.11 .11	47.1 2.3
20.5	23.83 —.05	50.1 2.8	43.18 +0.5	35.3 0.4	51.24 .04	35.7 0.5	29.18 +0.4	49.5 2.4
30.4	23.72 .16	53.0 2.7	43.19 .00	35.6 —0.2	51.26 +.01	36.3 0.7	29.18 —.03	52.0 2.5
Apr. 9.4	23.51 —.26	55.6 +2.5	43.18 —.03	35.7 0.0	51.25 —.02	37.1 +0.8	29.12 —.09	54.4 +2.4
19.4	23.21 .34	58.0 2.2	43.13 .05	35.6 +0.1	51.21 .05	37.9 0.9	29.00 .14	56.8 2.2
29.4	22.83 .41	60.1 1.9	43.07 .07	35.4 0.3	51.14 .07	38.9 0.9	28.84 .18	58.9 2.0
May 9.3	22.39 .46	61.8 1.4	42.99 .08	35.0 0.4	51.06 .09	39.8 0.9	28.64 .21	60.8 1.7
19.3	21.91 .49	63.0 0.9	42.90 .09	34.6 0.5	50.97 .09	40.7 0.8	28.42 .23	62.3 1.3
29.3	21.42 —.50	63.7 +0.4	42.81 —.09	34.1 +0.5	50.87 —.10	41.5 +0.8	28.18 —.24	63.4 +0.9
June 8.3	20.92 .50	63.9 —0.1	42.71 .09	33.5 0.6	50.77 .10	42.2 0.7	27.93 .25	64.1 +0.5
18.2	20.42 .48	63.6 0.6	42.62 .09	32.9 0.6	50.66 .10	42.8 0.5	27.68 .24	64.3 0.0
28.2	19.96 .45	62.7 1.1	42.53 .09	32.3 0.6	50.56 .10	43.2 0.4	27.44 .23	64.1 —0.4
July 8.2	19.53 .41	61.3 1.6	42.45 .08	31.7 0.6	50.47 .09	43.5 +0.2	27.21 .22	63.5 0.0
18.1	19.15 —.35	59.5 —2.0	42.37 —.07	31.1 +0.5	50.38 —.08	43.7 0.0	27.01 —.20	62.4 —1.3
28.1	18.82 .29	57.2 2.4	42.31 .05	30.6 0.5	50.31 .07	43.6 —0.1	26.83 .17	60.9 1.7
Aug. 7.1	18.56 .23	54.6 2.8	42.26 .03	30.2 0.4	50.25 .05	43.4 0.3	26.67 .13	59.0 2.1
17.1	18.37 .15	51.7 3.1	42.23 —.01	29.8 0.3	50.21 —.03	43.0 0.5	26.56 .09	56.7 2.4
27.0	18.26 —.07	48.5 3.3	42.23 +.01	29.6 +0.1	50.20 .00	42.3 0.8	26.48 .05	54.2 2.7
Sept. 6.0	18.24 +.02	45.0 —3.5	42.25 +.04	29.5 —0.1	50.20 +.02	41.5 —1.0	26.45 —.01	51.4 —2.9
16.0	18.30 .11	41.5 3.6	42.31 .07	29.7 0.3	50.24 .06	40.4 1.2	26.47 +.04	48.3 3.1
26.0	18.45 .20	37.8 3.6	42.40 .11	30.1 0.5	50.32 .09	39.1 1.4	26.54 .10	45.1 3.3
Oct. 5.9	18.70 .29	34.2 3.6	42.52 .14	30.7 0.8	50.43 .13	37.6 1.6	26.67 .16	41.7 3.4
15.9	19.04 .39	30.6 3.3	42.68 .18	31.6 1.0	50.58 .17	35.9 1.8	26.86 .22	38.4 3.4
25.9	19.47 +.48	27.2 —3.3	42.89 +.22	32.8 —1.3	50.77 +.21	33.9 —2.0	27.11 +.28	35.0 —3.3
Nov. 4.8	19.99 .56	24.0 3.0	43.13 .26	34.2 1.6	51.01 .25	31.8 2.2	27.42 .34	31.8 3.2
14.8	20.60 .63	21.2 2.7	43.40 .29	35.9 1.8	51.28 .28	29.6 2.3	27.79 .39	28.7 2.9
24.8	21.27 .69	18.7 2.2	43.71 .31	37.8 2.0	51.58 .31	27.3 2.3	28.20 .43	25.9 2.6
Dec. 4.8	21.99 .73	16.7 1.7	44.03 .33	39.9 2.1	51.90 .33	25.0 2.3	28.66 .47	23.4 2.2
14.7	22.74 +.76	15.2 —1.2	44.37 +.34	42.1 —2.2	52.24 +.34	22.7 —2.2	29.14 +.49	21.4 —1.8
24.7	23.50 .76	14.4 —0.6	44.70 .33	44.3 2.2	52.58 .34	20.6 2.0	29.63 .49	19.9 1.3
34.7	24.25 +.74	14.1 0.0	45.03 +.32	46.5 —2.1	52.92 +.34	18.7 —1.8	30.12 +.49	18.9 —0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Virginis.		γ Draconis (H.)		γ Corvi.		β Chamæleontis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination South.
	h m 11 59	° ' " + 9 17	h m 12 7	° ' " +78 10	h m 12 10	° ' " -16 58	h m 12 12	° ' " -78 44
(Dec. 30.7)	58.77 +.34	68.5 -2.1	26.51 +1.18	53.8 -0.5	31.31 +.35	12.9 -2.3	17.64 +1.24	9.9 -1.4
Jan. 9.7	59.10 .32	66.6 1.9	27.69 1.15	53.6 +0.1	31.65 .33	15.2 2.3	18.87 1.18	11.7 2.1
19.7	59.42 .30	64.8 1.6	28.81 1.08	54.0 0.8	31.97 .31	17.6 2.4	20.01 1.08	14.0 2.6
29.6	59.70 .27	63.4 1.3	29.85 .97	55.1 1.4	32.27 .28	19.9 2.3	21.03 .96	16.9 3.0
Feb. 8.6	59.95 .23	62.2 1.0	30.75 .83	56.7 1.9	32.52 .24	22.2 2.2	21.92 .81	20.1 3.3
18.6	60.16 +.19	61.4 -0.7	31.50 +.66	58.9 +2.4	32.74 +.20	24.3 -2.1	22.65 +.65	23.6 -3.6
28.6	60.32 .14	60.9 0.4	32.06 .47	61.5 2.7	32.92 .16	26.3 1.9	23.22 .48	27.3 3.8
Mar. 10.5	60.44 .10	60.6 -0.1	32.43 .27	64.3 2.9	33.05 .11	28.1 1.7	23.62 .31	31.1 3.9
20.5	60.52 .06	60.7 +0.2	32.59 +.06	67.3 3.0	33.14 .07	29.6 1.4	23.84 +.14	35.0 3.9
30.5	60.56 +.02	61.0 0.4	32.55 - .13	70.3 3.0	33.20 .04	30.9 1.2	23.90 - .02	38.8 3.8
Apr. 9.5	60.57 - .01	61.4 +0.5	32.32 - .32	73.3 +2.9	33.22 +.01	32.0 -1.0	23.80 - .18	42.5 -3.6
19.4	60.55 .03	62.0 0.7	31.91 .48	76.0 2.6	33.21 - .02	32.8 0.7	23.54 .33	46.0 3.4
29.4	60.50 .05	62.8 0.7	31.35 .62	78.5 2.3	33.18 .04	33.4 0.5	23.14 .47	49.3 3.1
May 9.4	60.44 .07	63.5 0.8	30.65 .74	80.6 1.9	33.13 .06	33.8 0.3	22.60 .59	52.2 2.7
19.3	60.36 .08	64.3 0.8	29.86 .83	82.2 1.4	33.06 .07	34.0 -0.1	21.96 .70	54.6 2.3
29.3	60.27 - .09	65.1 +0.7	28.99 - .89	83.3 +0.9	32.97 - .08	34.0 +0.1	21.21 - .79	56.7 -1.8
June 8.3	60.18 .09	65.8 0.7	28.07 .92	83.9 +0.3	32.88 .09	33.8 0.3	20.38 .85	58.3 1.3
18.3	60.08 .10	66.4 0.6	27.14 .92	84.0 -0.2	32.78 .10	33.4 0.5	19.50 .90	59.3 0.8
28.2	59.98 .10	67.0 0.5	26.22 .91	83.5 0.8	32.68 .10	32.8 0.6	18.58 .92	59.8 -0.2
July 8.2	59.89 .09	67.5 0.4	25.33 .86	82.4 1.3	32.58 .10	32.1 0.8	17.65 .92	59.7 +0.3
18.2	59.80 - .08	67.8 +0.3	24.50 - .80	80.8 -1.8	32.48 - .09	31.3 +0.9	16.74 - .88	59.1 +0.9
28.1	59.72 .07	68.0 +0.1	23.73 .72	78.8 2.3	32.39 .09	30.4 1.0	15.88 .82	57.9 1.4
Aug. 7.1	59.65 .06	68.1 0.0	23.06 .62	76.3 2.7	32.31 .08	29.4 1.0	15.10 .73	56.3 1.9
17.1	59.60 .04	67.9 -0.2	22.50 .51	73.4 3.1	32.24 .06	28.4 1.0	14.42 .61	54.2 2.3
27.1	59.57 - .02	67.7 0.4	22.05 .38	70.2 3.3	32.20 - .03	27.4 1.0	13.88 .46	51.7 2.6
Sept. 6.0	59.57 +.01	67.2 -0.6	21.74 - .24	66.7 -3.6	32.18 .00	26.4 +0.9	13.51 - .29	49.0 +2.8
16.0	59.59 .04	66.4 0.8	21.57 - .09	63.0 3.7	32.19 +.03	25.6 0.7	13.32 - .09	46.1 2.9
26.0	59.65 .08	65.5 1.1	21.55 +.06	59.2 3.8	32.24 .07	25.0 0.5	13.32 +.11	43.1 3.0
Oct. 6.0	59.75 .12	64.3 1.3	21.70 .23	55.4 3.8	32.33 .11	24.6 +0.3	13.54 .32	40.1 2.9
15.9	59.88 .16	62.9 1.5	22.00 .39	51.5 3.8	32.46 .16	24.5 0.0	13.97 .53	37.3 2.7
25.9	60.06 +.20	61.2 -1.8	22.47 +.54	47.8 -3.6	32.64 +.20	24.7 -0.4	14.60 +.73	34.8 +2.3
Nov. 4.9	60.27 .24	59.4 2.0	23.10 .70	44.3 3.4	32.86 .24	25.2 0.7	15.42 .90	32.7 1.9
14.8	60.53 .27	57.3 2.1	23.87 .85	41.1 3.0	33.12 .28	26.1 1.1	16.41 1.05	31.0 1.4
24.8	60.82 .30	55.1 2.2	24.79 .97	38.3 2.6	33.42 .31	27.3 1.4	17.53 1.17	29.9 0.8
Dec. 4.8	61.13 .32	52.9 2.2	25.81 1.07	35.9 2.2	33.75 .33	28.9 1.7	18.74 1.25	29.4 +0.1
14.8	61.47 +.34	50.6 -2.2	26.92 +1.14	34.1 -1.6	34.09 +.35	30.7 -2.0	20.02 +1.28	29.6 -0.5
24.7	61.81 .34	48.4 2.1	28.09 1.17	32.8 1.0	34.44 .35	32.8 2.2	21.31 1.27	30.4 1.1
34.7	62.15 +.33	46.4 -2.0	29.27 +1.19	32.2 -0.4	34.79 +.34	35.1 -2.3	22.57 +1.23	31.8 -1.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Virginia.		α^1 Crucis.		β Corvi.		ϵ Draconis.	
	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	h m 12 14	° ' " — 0 5	h m 12 20	° ' " — 62 31	h m 12 28	° ' " — 22 49	h m 12 29	° ' " + 70 20
(Dec. 30.7)	s	"	s	"	s	"	s	"
Jan. 9.7	39.05 +.34	46.8 —2.2	52.32 +.60	29.7 —1.7	59.18 +.36	37.0 —2.2	7.29 +.77	56.0 —1.1
19.7	39.39 .32	48.9 2.1	52.92 .57	31.7 2.2	59.54 .35	39.2 2.3	8.05 .75	55.3 —0.4
29.6	39.70 .30	51.0 1.9	53.47 .53	34.2 2.6	59.88 .33	41.6 2.4	8.79 .72	55.3 +0.3
Feb. 8.6	39.99 .27	52.8 1.7	53.98 .48	37.0 3.0	60.19 .30	44.0 2.4	9.48 .66	55.9 0.9
18.6	40.24 .24	54.4 1.5	54.42 .41	40.2 3.3	60.46 .26	46.4 2.4	10.10 .58	57.0 1.5
28.6	40.46 +.20	55.7 —1.2	54.80 +.34	43.6 —3.5	60.70 +.22	48.8 —2.3	10.63 +.48	58.8 +2.0
Mar. 10.5	40.64 .16	56.8 0.9	55.10 .27	47.1 3.6	60.90 .18	51.0 2.1	11.05 .56	61.0 2.4
20.5	40.78 .12	57.6 0.7	55.33 .19	50.7 3.6	61.06 .14	53.0 1.9	11.35 .24	63.6 2.7
30.5	40.87 .08	58.1 0.4	55.48 .12	54.3 3.5	61.18 .10	54.9 1.7	11.53 +.12	66.4 2.9
Apr. 9.5	40.93 .04	58.4 —0.2	55.56 +.05	57.7 3.4	61.25 .06	56.5 1.5	11.60 .00	69.3 2.9
19.4	40.95 +.01	58.5 0.0	55.57 —.02	61.0 —3.2	61.29 +.03	57.9 —1.3	11.54 —.11	72.3 +2.9
29.4	40.95 —.02	58.4 +0.2	55.52 .08	64.1 2.9	61.30 .00	59.1 1.1	11.37 .22	75.1 2.8
May 9.4	40.92 .04	58.1 0.3	55.41 .14	66.9 2.6	61.29 —.03	60.0 0.8	11.10 .31	77.8 2.5
19.3	40.87 .06	57.7 0.4	55.25 .19	69.3 2.3	61.25 .05	60.7 0.6	10.76 .38	80.1 2.1
29.3	40.81 .07	57.2 0.5	55.04 .23	71.4 1.9	61.19 .07	61.2 0.4	10.34 .44	82.0 1.7
June 8.3	40.73 —.08	56.7 +0.6	54.80 —.26	73.0 —1.4	61.12 —.08	61.5 —0.1	9.88 —.48	83.5 +1.2
18.3	40.64 .09	56.1 0.6	54.52 .29	74.2 1.0	61.03 .09	61.5 +0.1	9.37 .51	84.5 0.7
28.2	40.55 .09	55.5 0.6	54.21 .31	75.0 —0.5	60.93 .10	61.3 0.3	8.85 .52	85.0 +0.2
July 8.2	40.46 .09	54.9 0.6	53.89 .32	75.2 0.0	60.82 .11	60.9 0.5	8.32 .52	84.9 —0.3
18.2	40.37 .09	54.3 0.6	53.56 .33	74.9 +0.5	60.71 .11	60.2 0.7	7.80 .51	84.3 0.8
28.2	40.28 —.09	53.7 +0.5	53.24 —.32	74.2 +1.0	60.60 —.11	59.4 +0.9	7.31 —.48	83.3 —1.3
Aug. 7.1	40.19 .08	53.2 0.5	52.93 .30	72.9 1.4	60.49 .10	58.5 1.0	6.84 .44	81.6 1.8
17.1	40.11 .07	52.8 0.4	52.64 .27	71.3 1.8	60.39 .09	57.4 1.1	6.42 .39	79.6 2.3
27.1	40.05 .05	52.5 0.2	52.40 .22	69.3 2.1	60.31 .07	56.2 1.2	6.05 .34	77.1 2.7
Sept. 6.0	40.01 —.03	52.3 +0.1	52.20 .16	67.0 2.4	60.24 .05	55.1 1.2	5.75 .27	74.2 3.0
16.0	39.99 .00	52.2 —0.1	52.07 —.10	64.5 +2.6	60.20 —.02	53.9 +1.1	5.52 —.19	71.1 —3.3
26.0	40.00 +.03	52.4 0.3	52.00 —.02	61.8 2.7	60.20 +.01	52.8 1.0	5.37 .10	67.6 3.5
Oct. 6.0	40.05 .06	52.8 0.5	52.03 +.07	59.1 2.6	60.23 .05	51.8 0.9	5.31 —.01	64.0 3.7
15.9	40.13 .10	53.4 0.7	52.14 .16	56.5 2.5	60.30 .10	51.1 0.6	5.35 +.09	60.3 3.8
25.9	40.25 .14	54.3 1.0	52.34 .25	54.1 2.2	60.42 .14	50.6 +0.3	5.49 .39	56.5 3.8
Nov. 4.9	40.42 +.18	55.4 —1.3	52.63 +.34	52.0 +1.9	60.59 +.19	50.4 0.0	5.74 +.30	52.7 —3.7
14.9	40.63 .23	56.8 1.5	53.01 .42	50.3 1.5	60.80 .24	50.5 —0.3	6.09 .40	49.0 3.5
24.8	40.87 .26	58.5 1.8	53.46 .49	49.1 1.0	61.06 .28	51.1 0.7	6.54 .50	45.6 3.3
Dec. 4.8	41.16 .29	60.3 2.0	53.98 .55	48.5 +0.4	61.35 .31	52.0 1.1	7.09 .59	42.5 2.9
14.8	41.47 .32	62.4 2.1	54.55 .59	48.4 —0.2	61.68 .34	53.2 1.4	7.72 .66	39.7 2.5
24.7	41.79 +.33	64.5 —2.2	55.15 +.61	48.9 —0.8	62.03 +.35	54.8 —1.7	8.41 +.71	37.5 —2.0
34.7	42.13 .34	66.7 2.2	55.77 .61	50.0 1.4	62.39 .36	56.7 2.0	9.14 .75	35.8 1.4
	42.47 +.34	68.9 —2.1	56.37 +.60	51.6 —1.9	62.75 +.36	58.8 —2.2	9.90 +.76	34.7 —0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β^2 Camelop. (H.)		α Can. Venaticorum.		θ Virginia.		α Virginia. (Spica.)	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination South.
	^h ^m 12 48	[°] ['] +83 57	^h ^m 12 51	[°] ['] +38 51	^h ^m 13 4	[°] ['] - 4 59	^h ^m 13 19	[°] ['] -10 37
(Dec. 30.7)	25.64+2.15	55.2 -0.9	13.57 +.40	68.4 -1.9	37.51 +.34	27.1 -2.2	46.38 +.35	30.0 -2.0
Jan. 9.7	27.80 2.16	54.6 -0.3	13.96 .39	66.7 1.4	37.85 .34	29.2 2.1	46.72 .34	32.0 2.1
19.7	29.94 2.10	54.6 +0.4	14.35 .37	65.5 0.9	38.18 .32	31.3 2.0	47.06 .33	34.1 2.1
29.7	31.98 1.96	55.3 1.0	14.71 .35	64.9 -0.4	38.49 .30	33.2 1.9	47.39 .31	36.1 1.9
Feb. 8.6	33.85 1.75	56.6 1.6	15.04 .31	64.7 +0.1	38.78 .27	35.0 1.7	47.68 .28	38.0 1.8
18.6	35.48+1.48	58.5 +2.1	15.34 +.27	65.1 +0.6	39.04 +.24	36.5 -1.4	47.95 +.25	39.7 -1.6
28.6	36.80 1.15	60.9 2.5	15.58 .22	66.0 1.1	39.26 .20	37.8 1.2	48.19 .22	41.2 1.4
Mar. 10.6	37.77 .79	63.6 2.8	15.77 .17	67.3 1.5	39.44 .17	38.9 0.9	48.39 .18	42.6 1.2
20.5	38.37 .41	66.6 3.0	15.92 .12	69.0 1.8	39.59 .13	39.7 0.7	48.55 .14	43.6 1.0
30.5	38.58+ .02	69.6 3.1	16.01 .07	70.9 2.0	39.70 .09	40.2 0.4	48.68 .11	44.5 0.7
Apr. 9.5	38.41- .37	72.7 +3.0	16.06 +.02	72.9 +2.1	39.77 +.06	40.5 -0.2	48.77 +.08	45.1 -0.5
19.4	37.86 .73	75.7 2.9	16.06 -0.2	75.1 2.1	39.82 .03	40.6 0.0	48.83 .05	45.6 0.3
29.4	36.96 1.05	78.4 2.6	16.02 .05	77.2 2.1	39.84 +.01	40.5 +0.1	48.87 +.02	45.8 -0.2
May 9.4	35.77 1.33	80.9 2.2	15.95 .08	79.3 2.0	39.83 -0.2	40.3 0.3	48.88 .00	45.9 0.0
19.4	34.31 1.57	82.9 1.8	15.85 .11	81.2 1.8	39.80 .04	40.0 0.4	48.86 -0.2	45.8 +0.1
29.3	32.65-1.75	84.4 +1.3	15.73 -0.13	82.8 +1.5	39.76 -0.05	39.6 +0.5	48.83 -0.4	45.6 +0.2
June 8.3	30.83 1.87	85.4 0.7	15.59 .15	84.1 1.2	39.70 .07	39.1 0.5	48.77 .06	45.3 0.4
18.3	28.91 1.94	85.9 +0.2	15.44 .16	85.1 0.9	39.62 .08	38.5 0.6	48.70 .08	44.9 0.4
28.3	26.95 1.97	85.8 -0.4	15.28 .16	85.8 0.5	39.53 .09	38.0 0.6	48.62 .09	44.4 0.5
July 8.2	24.99 1.94	85.2 0.9	15.11 .16	86.1 +0.1	39.43 .10	37.4 0.6	48.52 .10	43.9 0.6
18.2	23.08-1.87	84.0 -1.4	14.95 -0.16	86.1 -0.3	39.33 -0.10	36.8 +0.6	48.42 -0.11	43.3 +0.6
28.2	21.27 1.76	82.3 1.9	14.79 .15	85.6 0.7	39.23 .10	36.2 0.6	48.31 .11	42.7 0.6
Aug. 7.1	19.58 1.60	80.2 2.4	14.64 .14	84.8 1.0	39.13 .10	35.7 0.5	48.20 .11	42.0 0.6
17.1	18.07 1.41	77.6 2.8	14.51 .12	83.5 1.4	39.04 .09	35.2 0.4	48.10 .10	41.4 0.6
27.1	16.77 1.19	74.6 3.1	14.39 .10	82.0 1.7	38.95 .07	34.8 0.3	48.01 .08	40.8 0.5
Sept. 6.1	15.70- .94	71.3 -3.4	14.31 -0.07	80.1 -2.0	38.89 -0.05	34.5 +0.2	47.93 -0.06	40.3 +0.5
16.0	14.88 .67	67.7 3.7	14.25 -0.04	77.9 2.3	38.86 -0.02	34.4 0.0	47.88 -0.04	39.9 0.3
26.0	14.36 .38	63.9 3.8	14.23 .00	75.4 2.6	38.85 +0.01	34.5 -0.2	47.86 .00	39.6 +0.2
Oct. 6.0	14.13- .07	60.1 3.9	14.26 +0.05	72.7 2.8	38.88 .05	34.8 0.4	47.88 +0.04	39.6 0.0
16.0	14.22+ .35	56.2 3.9	14.34 .10	69.7 3.0	38.96 .10	35.3 0.7	47.94 .08	39.7 -0.3
25.9	14.64+ .58	52.3 -3.8	14.46 +.15	66.7 -3.1	39.08 +.14	36.0 -0.9	48.05 +.13	40.2 -0.5
Nov. 4.9	15.38 .90	48.6 3.6	14.64 .21	63.5 3.2	39.24 .19	37.1 1.2	48.20 .18	40.8 0.8
14.9	16.44 1.21	45.1 3.3	14.88 .26	60.4 3.1	39.45 .23	38.4 1.4	48.40 .22	41.8 1.1
24.8	17.79 1.50	42.0 2.9	15.16 .30	57.3 3.0	39.70 .27	40.0 1.7	48.65 .26	43.0 1.4
Dec. 4.8	19.42 1.75	39.3 2.5	15.48 .34	54.3 2.8	39.99 .30	41.8 1.9	48.93 .30	44.6 1.6
14.8	21.27+1.94	37.1 -1.9	15.83 +.37	51.7 -2.5	40.30 +.32	43.7 -2.0	49.24 +.32	46.2 -1.8
24.8	23.29 2.07	35.4 1.5	16.21 .39	49.3 2.2	40.63 .34	45.8 2.1	49.57 .34	48.2 1.9
34.7	25.40+2.16	34.4 -0.7	16.61 +.40	47.3 -1.8	40.97 +.34	47.9 -2.2	49.92 +.36	50.1 -2.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Virginia.		γ Ursæ Majoris.		γ Bootis.		β Centauri.		
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	
	h m 13 29	° ' " — 0 4	h m 13 43	° ' " +49 48	h m 13 49	° ' " +18 54	h m 13 56	° ' " —59 52	
	s	"	s	"	s	"	s	"	
(Dec. 30.8)	27.08 +.34	17.7 —2.2	29.43 +.43	75.0 —2.2	47.21 +.34	35.7 —2.4	32.39 +.58	25.7 —0.5	
Jan. 9.8	27.42 .34	19.8 2.1	29.86 .44	73.0 1.7	47.55 .34	33.5 2.1	32.98 .39	26.4 1.0	
19.7	27.75 .33	21.8 1.9	30.30 .44	71.6 1.1	47.89 .34	31.6 1.7	33.57 .58	27.7 1.5	
29.7	28.07 .31	23.7 1.7	30.74 .42	70.7 —0.5	48.22 .32	30.0 1.3	34.14 .56	29.4 1.9	
Feb. 8.7	28.37 .28	25.3 1.5	31.15 .39	70.5 +0.1	48.54 .30	28.9 0.9	34.68 .52	31.5 2.2	
	18.7	28.64 +.25	26.6 —1.2	31.52 +.35	70.9 +0.7	48.83 +.28	28.2 —0.5	35.19 +.48	33.9 —2.5
	28.6	28.88 .22	27.6 0.9	31.86 .31	71.8 1.2	49.09 .24	27.9 —0.1	35.65 .43	36.5 2.7
Mar. 10.6	29.08 .19	28.4 0.6	32.14 .26	73.3 1.7	49.31 .21	28.0 +0.3	36.05 .37	39.4 2.9	
	29.25 .15	28.9 0.4	32.37 .20	75.2 2.1	49.50 .17	28.5 0.7	36.40 .31	42.4 3.0	
	30.5	29.38 .12	29.1 —0.1	32.54 .14	77.5 2.4	49.65 .13	29.4 1.0	36.68 .25	45.4 3.0
Apr. 9.5	29.48 +.08	29.1 +0.1	32.65 +.08	80.0 +2.6	49.76 +.10	30.5 +1.2	36.91 +.19	48.4 —3.0	
	19.5	29.55 .05	28.9 0.3	32.70 +.03	82.7 2.7	49.84 .06	31.8 1.4	37.07 .15	51.4 2.9
	29.5	29.59 +.03	28.5 0.4	32.71 —.02	85.4 2.6	49.89 +.03	33.3 1.5	37.18 .07	54.2 2.8
May 9.4	29.60 .00	27.9 0.5	32.66 .07	88.0 2.5	49.91 .00	34.8 1.5	37.22 +.02	56.9 2.6	
	19.4	29.59 —.02	27.3 0.6	32.57 .11	90.5 2.3	49.90 —.02	36.4 1.5	37.21 —.04	59.4 2.3
	29.4	29.56 —.04	26.7 +0.7	32.44 —.15	92.7 +2.1	49.87 —.05	37.9 +1.4	37.14 —.09	61.6 —2.0
June 8.3	29.51 .06	26.0 0.7	32.28 .18	94.6 1.7	49.81 .07	39.2 1.3	37.02 .14	63.5 1.7	
	18.3	29.44 .07	25.3 0.7	32.09 .20	96.1 1.3	49.73 .09	40.5 1.1	36.85 .19	65.0 1.3
	28.3	29.36 .09	24.6 0.7	31.88 .22	97.3 0.9	49.64 .10	41.5 0.9	36.64 .23	66.1 0.9
July 8.3	29.27 .10	24.0 0.6	31.65 .23	98.0 +0.5	49.53 .11	42.4 0.7	36.40 .26	66.8 0.5	
	18.2	29.16 —.11	23.4 +0.5	31.41 —.24	98.3 0.0	49.41 —.12	43.0 +0.5	36.12 —.29	67.1 —0.1
	28.2	29.05 .11	22.9 0.5	31.17 .24	98.1 —0.4	49.28 .13	43.3 +0.2	35.82 .30	66.9 +0.4
Aug. 7.2	28.94 .11	22.4 0.4	30.93 .24	97.4 0.9	49.15 .13	43.4 —0.1	35.52 .30	66.3 0.8	
	17.2	28.83 .10	22.1 0.3	30.70 .22	96.3 1.4	49.02 .13	43.2 0.3	35.22 .29	65.3 1.2
	27.1	28.74 .09	21.9 +0.1	30.48 .20	94.7 1.8	48.89 .12	42.7 0.6	34.94 .26	63.8 1.6
Sept. 6.1	28.66 —.07	21.9 0.0	30.29 —.17	92.7 —2.2	48.79 —.10	42.0 —0.9	34.69 —.28	62.0 +1.9	
	16.1	28.60 .04	22.0 —0.2	30.13 .14	90.4 2.5	48.70 .07	41.0 1.2	34.49 .17	60.0 2.2
	26.0	28.57 —.01	22.3 0.4	30.01 .09	87.7 2.8	48.64 —.04	39.7 1.5	34.35 .10	57.7 2.3
Oct. 6.0	28.57 +.03	22.9 0.7	29.94 —.04	84.7 3.1	48.61 .00	38.1 1.7	34.29 —.02	55.3 2.4	
	16.0	28.62 .07	23.6 0.9	29.93 +.02	81.4 3.3	48.63 +.04	36.2 2.0	34.30 +.06	52.8 2.4
	26.0	28.71 +.11	24.7 —1.2	29.98 +.08	78.0 —3.5	48.69 +.09	34.1 —2.2	34.41 +.15	50.5 +2.3
Nov. 4.9	28.85 .16	26.0 1.4	30.09 .15	74.5 3.5	48.80 .13	31.8 2.4	34.60 .24	48.3 2.0	
	14.9	29.03 .21	27.5 1.6	30.26 .21	70.9 3.5	48.96 .18	29.3 2.5	34.89 .33	46.4 1.7
	24.9	29.26 .25	29.2 1.8	30.50 .27	67.4 3.4	49.16 .23	26.7 2.6	35.26 .41	44.9 1.3
Dec. 4.8	29.53 .28	31.1 2.0	30.80 .32	64.1 3.2	49.41 .27	24.0 2.6	35.70 .47	43.8 0.8	
	14.8	29.83 +.31	33.2 —2.1	31.15 +.37	61.0 —2.9	49.70 +.30	21.4 —2.6	36.20 +.53	43.2 +0.3
	24.8	30.15 .33	35.3 2.1	31.54 .41	58.2 2.5	50.01 .32	18.9 2.4	36.75 .56	43.1 —0.2
	34.8	30.48 +.34	37.4 —2.1	31.96 +.43	55.9 —2.1	50.34 +.34	16.5 —2.3	37.33 +.59	43.5 —0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Draconis.		α Bootis. (<i>Arcturus</i> .)		θ Bootis.		ρ Bootis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 14 I	° ' " +64 51	h m 14 IO	° ' " +19 42	h m 14 21	° ' " +52 18	h m 14 27	° ' " +30 48
(Dec. 30.8)	36.12 +.56	39.5 -2.3	58.03 +.33	51.8 -2.5	41.46 +.41	73.3 -2.6	23.63 +.34	66.2 -2.6
Jan. 9.8	36.69 .59	37.5 1.7	58.36 .34	49.5 2.2	41.89 .43	70.9 2.1	23.97 .35	63.8 2.2
19.8	37.29 .60	36.1 1.0	58.70 .35	47.5 1.8	42.33 .45	69.1 1.5	24.33 .36	61.8 1.8
29.7	37.89 .59	35.4 -0.4	59.04 .33	45.8 1.4	42.78 .44	67.9 0.9	24.69 .35	60.2 1.3
Feb. 8.7	38.47 .56	35.4 +0.3	59.36 .31	44.6 1.0	43.22 .43	67.3 -0.3	25.03 .33	59.1 0.8
18.7	39.02 +.52	36.0 +0.9	59.65 +.29	43.8 -0.6	43.63 +.40	67.4 +0.4	25.36 +.31	58.6 -0.3
28.7	39.51 .45	37.3 1.5	59.93 .26	43.4 -0.2	44.01 .36	68.1 1.0	25.66 .28	58.6 +0.2
Mar. 10.6	39.92 .38	39.1 2.0	60.17 .22	43.5 +0.3	44.34 .31	69.4 1.5	25.92 .25	59.1 0.7
20.6	40.27 .30	41.3 2.4	60.37 .19	43.9 0.7	44.63 .26	71.1 2.0	26.15 .21	60.1 1.2
30.6	40.52 .21	43.9 2.7	60.54 .15	44.8 1.0	44.86 .20	73.4 2.4	26.35 .17	61.5 1.5
Apr. 9.5	40.69 +.12	46.8 +2.9	60.67 +.12	45.9 +1.2	45.03 +.14	75.9 +2.6	26.50 +.14	63.2 +1.8
19.5	40.77 +.03	49.8 3.0	60.77 .08	47.3 1.4	45.14 .08	78.6 2.8	26.62 .10	65.2 2.0
29.5	40.76 -.05	52.9 3.0	60.84 .05	48.8 1.5	45.19 +.03	81.5 2.8	26.70 .06	67.3 2.2
May 9.5	40.66 .13	55.8 2.9	60.87 +.02	50.4 1.6	45.19 -.03	84.3 2.8	26.74 +.03	69.5 2.2
19.4	40.50 .20	58.6 2.6	60.88 -.01	52.0 1.6	45.14 .08	87.0 2.6	26.75 -.01	71.7 2.1
29.4	40.27 -.26	61.1 +2.3	60.86 -.03	53.5 +1.5	45.03 -.12	89.6 +2.4	26.72 -.04	73.8 +2.0
June 8.4	39.97 .32	63.2 1.9	60.81 .06	55.0 1.4	44.89 .16	91.8 2.1	26.67 .07	75.7 1.8
18.4	39.63 .36	65.0 1.5	60.74 .08	56.3 1.2	44.71 .20	93.8 1.8	26.59 .07	77.5 1.6
28.3	39.26 .39	66.2 1.0	60.65 .10	57.5 1.0	44.49 .23	95.4 1.3	26.48 .12	78.9 1.3
July 8.3	38.85 .42	67.0 +0.5	60.54 .12	58.4 0.8	44.25 .23	96.5 0.9	26.35 .14	80.1 1.0
18.3	38.42 -.43	67.2 0.0	60.42 -.13	59.1 +0.6	43.99 -.27	97.1 +0.4	26.21 -.15	81.0 +0.7
28.2	37.98 .43	66.9 -0.5	60.29 .14	59.5 +0.3	43.72 .28	97.3 0.0	26.05 .16	81.5 +0.3
Aug. 7.2	37.55 .43	66.1 1.0	60.14 .14	59.6 0.0	43.44 .28	97.1 -0.5	25.88 .17	81.7 0.0
17.2	37.13 .41	64.8 1.5	60.00 .14	59.5 -0.3	43.16 .27	96.3 1.0	25.70 .17	81.5 -0.4
27.2	36.73 .38	63.1 2.0	59.86 .14	59.1 0.6	42.89 .26	95.0 1.5	25.53 .16	80.8 0.8
Sept. 6.1	36.37 -.34	60.8 -2.4	59.74 -.12	58.3 -0.9	42.63 -.24	93.3 -1.9	25.38 -.15	79.9 -1.2
16.1	36.05 .29	58.2 2.8	59.63 .10	57.3 1.2	42.41 .21	91.2 2.3	25.24 .13	78.6 1.5
26.1	35.79 .22	55.2 3.2	59.54 .07	56.0 1.5	42.22 .16	88.7 2.7	25.12 .10	76.9 1.8
Oct. 6.1	35.60 .15	51.9 3.4	59.50 -.03	54.4 1.8	42.08 .11	85.8 3.0	25.04 .06	74.9 2.1
16.0	35.49 -.07	48.3 3.6	59.49 +.01	52.5 2.0	41.99 -.05	82.7 3.3	25.00 -.02	72.6 2.4
26.0	35.47 +.02	44.6 -3.8	59.52 +.06	50.3 -2.2	41.97 +.01	79.3 -3.5	25.01 +.04	70.0 -2.7
Nov. 5.0	35.53 .11	40.7 3.8	59.61 .11	48.0 2.4	42.01 .08	75.7 3.6	25.07 .09	67.2 2.9
14.9	35.69 .21	36.9 3.8	59.74 .16	45.4 2.6	42.12 .15	72.0 3.7	25.18 .14	64.2 3.0
24.9	35.95 .30	33.2 3.6	59.92 .21	42.8 2.7	42.31 .22	68.4 3.6	25.35 .19	61.2 3.1
Dec. 4.9	36.30 .39	29.7 3.4	60.15 .25	40.0 2.7	42.56 .28	64.8 3.5	25.56 .24	58.1 3.1
14.9	36.73 +.46	26.5 -3.0	60.42 +.28	37.3 -2.7	42.87 +.34	61.5 -3.2	25.83 +.28	55.0 -2.9
24.8	37.22 .52	23.7 2.6	60.72 .31	34.6 2.6	43.23 .38	58.5 2.8	26.12 .31	52.2 2.7
34.8	37.77 +.57	21.4 -2.1	61.04 +.33	32.2 -2.4	43.64 +.40	55.8 -2.4	26.45 +.34	49.6 -2.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	5 Ursæ Minoris.		α Centauri (mean.)		ε Bootis.		α Libræ.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	h m 14 27	° ' +76 8	h m 14 32	° ' -60 24	h m 14 40	° ' +27 29	h m 14 45	° ' -15 36
(Dec. 30.8)	"	"	"	"	"	"	"	"
Jan. 9.8	43.20 +.84	48.2 -2.3	35.32 +.56	29.5 0.0	29.41 +.38	73.0 -2.6	10.70 +.31	54.1 -1.5
19.8	44.08 .92	46.2 1.8	35.90 .58	29.7 -0.5	29.74 .34	70.6 2.3	11.04 .33	55.7 1.6
29.7	45.02 .96	44.7 1.1	36.48 .59	30.4 1.0	30.08 .34	68.5 1.9	11.38 .34	57.3 1.6
Feb. 8.7	45.99 .97	43.9 -0.5	37.07 .58	31.6 1.4	30.43 .34	66.8 1.4	11.72 .34	58.9 1.6
	46.96 .95	43.8 +0.3	37.64 .55	33.2 1.8	30.77 .33	65.6 0.9	12.06 .33	60.6 1.6
18.7	47.89 +.90	44.3 +0.9	38.18 +.52	35.1 -2.1	31.09 +.31	64.9 -0.4	12.38 +.31	62.1 -1.5
28.7	48.75 .81	45.5 1.5	38.68 .48	37.3 2.3	31.39 .29	64.7 +0.1	12.67 .28	63.5 1.3
Mar. 10.6	49.50 .70	47.3 2.0	39.13 .43	39.8 2.5	31.66 .26	65.1 0.6	12.94 .26	64.7 1.2
20.6	50.13 .56	49.5 2.5	39.54 .38	42.4 2.7	31.90 .22	65.9 1.0	13.18 .23	65.8 1.0
30.6	50.62 .41	52.2 2.8	39.89 .32	45.2 2.8	32.10 .18	67.1 1.4	13.40 .20	66.7 0.8
Apr. 9.6	50.95 +.25	55.2 +3.0	40.17 +.26	48.0 -2.8	32.27 +.15	68.6 +1.7	13.58 +.17	67.4 -0.6
19.5	51.12 +.09	58.3 3.1	40.41 .20	50.8 2.8	32.40 .11	70.4 1.9	13.73 .14	67.9 0.5
29.5	51.13 -.07	61.4 3.1	40.57 .14	53.6 2.7	32.49 .08	72.4 2.0	13.86 .11	68.3 0.3
May 9.5	50.98 .22	64.5 3.0	40.68 .08	56.3 2.6	32.55 .04	74.5 2.1	13.95 .08	68.5 0.2
19.4	50.69 .36	67.5 2.8	40.73 +.02	58.8 2.4	32.58 +.01	76.6 2.1	14.02 .05	68.6 -0.1
June 29.4	50.26 -.49	70.1 +2.5	40.72 -.04	61.1 -2.2	32.57 -.02	78.7 +2.0	14.06 +.02	68.6 0.0
8.4	49.71 .60	72.5 2.1	40.64 .10	63.2 1.9	32.54 .05	80.6 1.8	14.07 .00	68.5 +0.1
18.4	49.06 .69	74.4 1.7	40.51 .16	65.0 1.6	32.47 .08	82.4 1.6	14.05 -.03	68.4 0.2
28.3	48.32 .77	75.8 1.2	40.32 .21	66.4 1.3	32.38 .10	83.9 1.4	14.00 .06	68.1 0.3
July 8.3	47.52 .82	76.7 0.7	40.10 .25	67.5 0.9	32.27 .12	85.2 1.1	13.93 .08	67.8 0.3
18.3	46.67 -.86	77.2 +0.2	39.82 -.29	68.1 -0.4	32.13 -.14	86.1 +0.8	13.84 -.10	67.4 +0.4
28.3	45.80 .88	77.1 -0.4	39.52 .31	68.3 0.0	31.98 .16	86.7 0.5	13.73 .12	67.0 0.5
Aug. 7.2	44.92 .87	76.4 0.9	39.20 .33	68.1 +0.4	31.82 .16	87.0 +0.1	13.60 .13	66.5 0.5
17.2	44.05 .85	75.2 1.4	38.87 .33	67.4 0.9	31.65 .17	87.0 -0.2	13.46 .14	66.0 0.5
27.2	43.22 .80	73.6 1.9	38.54 .31	66.4 1.3	31.48 .16	86.6 0.6	13.33 .13	65.4 0.5
Sept. 6.1	42.44 -.74	71.4 -2.4	38.24 -.28	64.9 +1.6	31.32 -.15	85.8 -0.9	13.20 -.12	64.9 +0.5
16.1	41.74 .66	68.9 2.8	37.97 .24	63.1 1.9	31.18 .13	84.7 1.3	13.08 .10	64.4 0.5
26.1	41.12 .56	65.9 3.1	37.77 .18	60.9 2.1	31.06 .10	83.2 1.6	12.99 .07	63.9 0.4
Oct. 6.1	40.62 .44	62.6 3.4	37.62 .10	58.7 2.3	30.97 .07	81.5 1.9	12.92 -.04	63.6 0.3
16.0	40.25 .30	59.1 3.6	37.56 -.02	56.3 2.4	30.93 -.03	79.3 2.2	12.90 .00	63.4 +0.1
26.0	40.02 -.15	55.3 -3.8	37.58 +.07	53.9 +2.3	30.92 +.02	77.0 -2.5	12.93 +.05	63.3 -0.1
Nov. 5.0	39.95 +.01	51.5 3.8	37.70 .17	51.6 2.2	30.97 .07	74.3 2.7	13.00 .10	63.5 0.3
15.0	40.04 .17	47.7 3.8	37.91 .26	49.5 2.0	31.07 .13	71.5 2.9	13.12 .15	63.9 0.5
24.9	40.29 .34	43.9 3.7	38.22 .34	47.7 1.7	31.22 .18	68.6 3.0	13.30 .20	64.5 0.8
Dec. 4.9	40.71 .49	40.3 3.5	38.61 .43	46.2 1.3	31.42 .23	65.6 3.0	13.52 .24	65.4 1.0
14.9	41.28 +.64	37.0 -3.1	39.06 +.49	45.2 +0.8	31.67 +.27	62.7 -2.9	13.78 +.28	66.5 -1.2
24.8	41.98 .76	34.1 2.6	39.58 .54	44.6 +0.3	31.96 .30	59.9 2.7	14.08 .31	67.8 1.4
34.8	42.80 +.86	31.7 -2.2	40.13 +.57	44.5 -0.1	32.27 +.33	57.2 -2.5	14.40 +.33	69.3 -1.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Ursæ Minoris.		β Bootis.		β Libræ.		μ^1 Bootis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	h m 14 50	° ' " +74 33	h m 14 58	° ' " +40 47	h m 15 11	° ' " - 9 0	h m 15 20	° ' " +37 43
(Dec. 30.8)	s 58.50 +.71	" 70.4 -2.6	s 3.77 +.33	" 28.3 -2.8	s 27.69 +.30	" 17.3 -1.6	s 35.62 +.31	" 59.8 -2.3
Jan. 9.8	59.26 -.79	68.0 2.1	4.12 -.36	25.7 2.4	28.00 -.32	18.9 1.7	35.94 .33	57.1 2.5
19.8	60.08 .85	66.3 1.5	4.49 .37	23.5 2.0	28.33 .33	20.6 1.6	36.29 .35	54.8 2.1
29.8	60.95 .88	65.1 0.8	4.87 .38	21.8 1.4	28.66 .33	22.2 1.5	36.65 .36	52.9 1.6
Feb. 8.7	61.84 .87	64.6 -0.1	5.24 .37	20.7 0.8	28.99 .32	23.6 1.4	37.01 .36	51.6 1.1
18.7	62.69 +.84	64.9 +0.6	5.61 +.33	20.1 -0.2	29.31 +.31	25.0 -1.2	37.37 +.35	50.8 -0.5
28.7	63.50 .78	65.8 1.2	5.95 .33	20.2 +0.4	29.61 .29	26.1 1.0	37.71 .33	50.6 +0.1
Mar. 10.7	64.24 .68	67.3 1.8	6.26 .30	20.9 0.9	29.89 .27	27.1 0.8	38.02 .30	51.0 0.7
20.6	64.87 .58	69.3 2.3	6.54 .26	22.1 1.4	30.14 .24	27.8 0.6	38.31 .27	52.0 1.2
30.6	65.38 .45	71.8 2.7	6.78 .22	23.7 1.8	30.37 .22	28.2 0.4	38.56 .23	53.5 1.6
Apr. 9.6	65.76 +.31	74.6 +2.9	6.97 +.18	25.8 +2.2	30.57 +.19	28.5 -0.2	38.78 +.19	55.3 +2.0
19.5	65.99 .17	77.7 3.1	7.13 .13	28.1 2.4	30.74 .16	28.6 0.0	38.95 .16	57.5 2.3
29.5	66.09 +.02	80.9 3.2	7.24 .09	30.6 2.6	30.89 .13	28.5 +0.2	39.09 .12	60.0 2.5
May 9.5	66.04 -.12	84.1 3.1	7.30 +.04	33.3 2.6	31.00 .10	28.2 0.3	39.18 .08	62.6 2.6
19.5	65.86 .25	87.1 3.0	7.32 .00	35.9 2.6	31.09 .07	27.9 0.4	39.24 +.04	65.2 2.6
29.4	65.55 -.37	90.0 +2.7	7.31 -.03	38.5 +2.5	31.15 +.04	27.5 +0.4	39.25 .00	67.8 +2.5
June 8.4	65.12 .48	92.5 2.4	7.25 .07	40.9 2.3	31.18 +.02	27.0 0.5	39.23 -.04	70.3 2.4
18.4	64.59 .57	94.7 2.0	7.16 .11	43.1 2.0	31.18 -.01	26.5 0.5	39.17 .08	72.5 2.1
28.4	63.98 .65	96.5 1.5	7.04 .14	44.9 1.7	31.15 .04	26.0 0.5	39.07 .11	74.6 1.9
July 8.3	63.29 .71	97.8 1.0	6.89 .16	46.5 1.3	31.09 .07	25.4 0.5	38.94 .14	76.3 1.5
18.3	62.54 -.77	98.5 +0.5	6.71 -.19	47.6 +0.9	31.01 -.09	24.9 +0.5	38.79 -.17	77.6 +1.2
28.3	61.76 .79	98.8 0.0	6.51 .21	48.3 0.5	30.91 .11	24.4 0.5	38.61 .19	78.6 0.8
Aug. 7.3	60.96 .80	98.5 -0.5	6.30 .22	48.7 +0.1	30.79 .13	23.9 0.4	38.41 .21	79.2 +0.4
17.2	60.16 .79	97.7 1.1	6.08 .22	48.5 -0.3	30.65 .14	23.5 0.4	38.19 .21	79.4 0.0
27.2	59.38 .76	96.4 1.6	5.85 .22	48.0 0.8	30.51 .14	23.1 0.4	37.97 .22	79.1 -0.5
Sept 6.2	58.63 -.72	94.6 -2.0	5.64 -.21	47.0 -1.2	30.37 -.13	22.7 +0.5	37.76 -.21	78.4 -0.9
16.1	57.94 .66	92.3 2.5	5.44 .19	45.5 1.6	30.24 .12	22.5 0.2	37.56 .19	77.3 1.3
26.1	57.32 .57	89.6 2.9	5.26 .16	43.7 2.0	30.13 .09	22.3 +0.1	37.37 .17	75.7 1.7
Oct. 6.1	56.80 .47	86.6 3.2	5.12 .12	41.5 2.4	30.05 .06	22.3 -0.1	37.22 .14	73.8 2.1
16.1	56.38 .35	83.2 3.5	5.02 .07	39.0 2.7	30.00 -.03	22.4 0.2	37.10 .09	71.5 2.5
26.0	56.09 -.22	79.6 -3.7	4.98 -.02	36.1 -3.0	30.00 +.02	22.7 -0.4	37.03 -.04	68.9 -2.5
Nov. 5.0	55.94 -.08	75.9 3.8	4.98 +.04	33.0 3.2	30.04 .07	23.3 0.6	37.02 +.01	66.0 3.0
15.0	55.94 +.07	72.0 3.9	5.05 .10	29.7 3.3	30.13 .12	24.0 0.8	37.05 .07	62.9 3.2
24.9	56.09 .22	68.2 3.7	5.18 .16	26.3 3.4	30.27 .17	25.0 1.0	37.15 .13	59.6 3.5
Dec. 4.9	56.39 .37	64.5 3.6	5.36 .21	22.9 3.4	30.47 .21	26.1 1.2	37.31 .18	56.3 3.3
14.9	56.84 +.51	61.1 -3.3	5.60 +.26	19.6 -3.2	30.70 +.25	27.5 -1.4	37.52 +.23	53.0 -3.2
24.9	57.42 .63	58.0 2.9	5.89 .31	16.5 3.0	30.97 .29	29.0 1.5	37.78 .28	49.9 3.0
34.8	58.11 +.73	55.3 -2.5	6.22 +.34	13.6 -2.7	31.27 +.32	30.5 -1.6	38.08 +.32	47.0 -2.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Ursæ Minoris.		α Coronæ Borealis.		α Serpentis.		ϵ Serpentis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 15 20	° ' " +72 11	h m 15 30	° ' " +27 3	h m 15 39	° ' " + 6 44	h m 15 45	° ' " + 4 46
(Dec. 30.9)	51.40 +.56	38.7 -3.0	19.33 +.29	24.6 -2.8	11.41 +.28	47.4 -2.2	40.62 +.27	65.7 -2.1
Jan. 9.8	52.01 .65	36.0 2.4	19.63 .31	22.0 2.5	11.70 .30	45.4 2.0	40.91 .30	63.7 2.0
19.8	52.70 .72	33.9 1.9	19.95 .32	19.7 2.1	12.01 .31	43.4 1.8	41.21 .31	61.8 1.8
29.8	53.44 .76	32.3 1.2	20.28 .34	17.7 1.7	12.33 .32	41.6 1.6	41.52 .32	60.1 1.6
Feb. 8.8	54.21 .77	31.4 -0.6	20.62 .35	16.3 1.2	12.64 .32	40.2 1.3	41.84 .32	58.6 1.3
18.7	54.98 +.76	31.2 +0.1	20.95 +.32	15.3 -0.7	12.96 +.31	39.0 -1.0	42.16 +.31	57.5 -1.0
28.7	55.72 .72	31.7 0.8	21.27 .31	14.8 -0.2	13.26 .29	38.2 0.7	42.46 .30	56.6 0.7
Mar. 10.7	56.41 .65	32.8 1.4	21.56 .29	14.9 +0.3	13.54 .27	37.7 -0.3	42.75 .28	56.1 -0.3
20.7	57.03 .57	34.5 2.0	21.84 .26	15.5 0.8	13.81 .25	37.6 +0.1	43.01 .26	56.0 0.0
30.6	57.55 .47	36.8 2.4	22.08 .23	16.5 1.2	14.05 .23	37.9 0.4	43.26 .23	56.1 +0.3
Apr. 9.6	57.97 +.36	39.4 +2.8	22.29 +.20	17.9 +1.6	14.26 +.20	38.4 +0.7	43.48 +.21	56.6 +0.6
19.6	58.27 .34	42.4 3.0	22.47 .16	19.7 1.9	14.45 .18	39.3 0.9	43.67 .18	57.4 0.8
29.5	58.46 +.12	45.5 3.2	22.62 .13	21.7 2.1	14.61 .15	40.3 1.1	43.84 .15	58.3 1.0
May 9.5	58.52 .00	48.7 3.2	22.73 .10	23.9 2.2	14.74 .12	41.5 1.2	43.98 .12	59.5 1.2
19.5	58.46 -1.12	51.9 3.1	22.81 .06	26.2 2.3	14.85 .09	42.8 1.3	44.09 .10	60.7 1.2
29.5	58.28 -2.23	55.0 +2.9	22.85 +.03	28.4 +2.1	14.92 +.06	44.2 +1.4	44.17 +.06	62.0 +1.3
June 8.4	57.99 .33	57.8 2.7	22.86 -0.01	30.6 2.1	14.96 +0.3	45.5 1.3	44.22 +0.3	63.2 1.3
18.4	57.61 .43	60.3 2.3	22.83 .04	32.7 1.9	14.97 .00	46.9 1.3	44.24 .00	64.5 1.2
28.4	57.14 .51	62.5 1.9	22.78 .07	34.6 1.7	14.95 -0.03	48.1 1.2	44.23 -0.03	65.7 1.1
July 8.4	56.59 .58	64.2 1.5	22.69 .10	36.2 1.5	14.90 .06	49.2 1.1	44.18 .06	66.8 1.0
18.3	55.98 -0.63	65.4 +1.0	22.57 -0.13	37.5 +1.2	14.82 -0.09	50.2 +0.9	44.11 -0.09	67.7 +0.9
28.3	55.32 .67	66.2 +0.5	22.43 .15	38.5 0.9	14.72 .11	51.0 0.7	44.01 .11	68.5 0.7
Aug. 7.3	54.63 .70	66.4 -0.1	22.27 .17	39.2 0.5	14.60 .13	51.7 0.6	43.89 .13	69.2 0.6
17.2	53.92 .71	66.1 0.6	22.09 .18	39.6 +0.2	14.46 .14	52.1 0.4	43.75 .14	69.7 0.4
27.2	53.21 .70	65.2 1.1	21.91 .12	39.5 -0.2	14.30 .15	52.4 +0.2	43.60 .15	70.0 +0.2
Sept. 6.2	52.52 -0.67	63.9 -1.6	21.72 -0.18	39.2 -0.6	14.15 -0.15	52.5 0.0	43.44 -0.15	70.1 0.0
16.2	51.87 .63	62.1 2.1	21.55 .17	38.4 0.9	14.00 .14	52.3 -0.3	43.30 .14	70.0 -0.2
26.1	51.27 .57	59.8 2.5	21.39 .15	37.3 1.3	13.87 .12	51.9 0.5	43.16 .12	69.7 0.4
Oct. 6.1	50.73 .49	57.1 2.9	21.26 .12	35.8 1.6	13.76 .09	51.3 0.7	43.05 .10	69.1 0.7
16.1	50.29 .39	54.0 3.2	21.16 .08	34.0 2.0	13.68 .06	50.4 1.0	42.97 .06	68.4 0.9
26.1	49.96 -0.28	50.6 -3.5	21.10 -0.03	31.8 -2.3	13.65 -0.02	49.3 -1.2	42.92 -0.02	67.4 -1.1
Nov. 5.0	49.74 .16	47.0 3.7	21.09 +0.02	29.4 2.5	13.65 +0.03	47.9 1.5	42.92 +0.02	66.2 1.3
15.0	49.64 -0.02	43.3 3.8	21.14 .07	26.8 2.7	13.70 .08	46.4 1.7	42.97 .07	64.7 1.5
25.0	49.69 +.11	39.4 3.8	21.23 .12	23.9 2.9	13.81 .13	44.6 1.9	43.07 .12	63.0 1.7
Dec. 4.9	49.87 .24	35.7 3.7	21.38 .17	21.0 3.0	13.96 .18	42.6 2.0	43.22 .17	61.2 1.9
14.9	50.18 +.37	32.1 -3.5	21.58 +.22	18.0 -2.9	14.16 +.22	40.5 -2.1	43.42 +.21	59.2 -2.0
24.9	50.62 .49	28.7 3.2	21.82 .26	15.1 2.8	14.40 .25	38.4 2.1	43.65 .25	57.2 2.0
34.9	51.16 +.59	25.8 -2.8	22.10 +.30	12.4 -2.7	14.67 +.28	36.3 -2.1	43.91 +.28	55.2 -2.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Ursæ Minoris.		ε Coronæ Borealis.		δ Scorpii.		β Scorpii.		
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination South.	
	h m 15 47	° ' +78 6	h m 15 53	° ' +27 10	h m 15 54	° ' -22 19	h m 15 59	° ' -19 31	
	s 39.93+ .67	" 19.0 -3.1	s 19.02 +.27	" 18.7 -2.8	s 14.19 +.30	" 46.7 -0.8	s 26.49 +.29	" 29.6 -0.9	
(Dec. 30.9)	39.93+ .67	19.0 -3.1	19.02 +.27	18.7 -2.8	14.19 +.30	46.7 -0.8	26.49 +.29	29.6 -0.9	
Jan. 9.9	40.68 .82	16.2 2.6	19.30 .30	16.1 2.5	14.50 .32	47.6 0.9	26.80 .31	30.6 1.0	
19.8	41.58 .94	13.8 2.1	19.61 .32	13.7 2.2	14.84 .34	48.6 1.0	27.12 .33	31.6 1.0	
29.8	42.57 1.03	12.0 1.5	19.93 .33	11.6 1.8	15.18 .35	49.7 1.1	27.46 .34	32.7 1.1	
Feb. 8.8	43.64 1.08	10.9 0.8	20.27 .33	10.0 1.3	15.53 .35	50.8 1.1	27.80 .34	33.9 1.1	
	18.7	44.73+1.09	20.60 +.32	9.0 -0.8	15.88 +.34	51.9 -1.1	28.14 +.33	35.0 -1.1	
	28.7	45.81 1.06	20.92 .31	8.4 -0.3	16.21 .33	53.0 1.0	28.47 .32	36.0 1.0	
Mar. 10.7	46.84 .99	11.5 1.2	21.22 .30	8.4 +0.2	16.53 .31	54.0 1.0	28.78 .31	36.9 0.9	
20.7	47.78 .89	13.0 1.7	21.51 .27	8.8 0.7	16.83 .29	54.9 0.9	29.08 .29	37.7 0.7	
30.6	48.61 .75	15.0 2.2	21.77 .25	9.8 1.2	17.11 .27	55.7 0.8	29.36 .27	38.4 0.6	
Apr. 9.6	49.29+ .60	17.5 +2.6	22.00 +.22	11.2 +1.6	17.36 +.24	56.4 -0.7	29.61 +.24	38.9 -0.5	
19.6	49.81 .43	20.3 2.9	22.20 .17	12.9 1.9	17.59 .22	57.0 0.6	29.84 .22	39.4 0.4	
29.6	50.15 .25	23.4 3.1	22.37 .15	14.9 2.1	17.79 .19	57.5 0.5	30.04 .19	39.7 0.3	
May 9.5	50.31+ .07	26.6 3.2	22.51 .12	17.2 2.3	17.96 .16	57.9 0.4	30.21 .16	39.9 0.2	
19.5	50.28- .12	29.9 3.2	22.61 .08	19.5 2.3	18.10 .13	58.2 0.3	30.36 .13	40.0 0.1	
	29.5	50.08- .29	33.0 +3.1	22.67 +.05	21.8 +2.3	18.21 +.09	58.4 -0.2	30.47 +.10	40.1 -0.1
June 8.4	49.70 .46	36.0 2.9	22.70 +.01	24.2 2.2	18.29 .06	58.6 0.2	30.55 .06	40.1 0.0	
18.4	49.16 .61	38.7 2.6	22.70 -0.02	26.4 2.1	18.33 +.02	58.8 -0.1	30.59 +.03	40.1 0.0	
28.4	48.47 .75	41.1 2.2	22.65 .06	28.4 1.9	18.33 -0.01	58.9 0.0	30.60 -0.01	40.0 +0.1	
July 8.4	47.66 .87	43.1 1.8	22.58 .09	30.2 1.7	18.30 .05	58.9 0.0	30.58 .04	39.9 0.1	
	18.3	46.74- .96	44.6 +1.3	22.47 -0.12	31.7 +1.4	18.24 -0.02	58.8 +0.1	30.52 -0.07	39.8 +0.2
	28.3	45.74 1.04	45.6 0.8	22.34 .15	32.9 1.1	18.15 .11	58.7 0.2	30.43 .10	39.6 0.2
Aug. 7.3	44.67 1.09	46.2 +0.3	22.18 .17	33.8 0.7	18.02 .13	58.5 0.2	30.31 .13	39.3 0.3	
17.3	43.56 1.12	46.2 -0.2	22.00 .18	34.3 +0.3	17.88 .15	58.2 0.3	30.17 .14	39.0 0.3	
27.2	42.44 1.12	45.7 0.7	21.81 .19	34.5 0.0	17.73 .16	57.8 0.4	30.02 .15	38.6 0.4	
Sept. 6.2	41.32-1.09	44.7 -1.2	21.62 -0.19	34.3 -0.4	17.57 -0.16	57.4 +0.4	29.86 -0.16	38.2 +0.4	
16.2	40.25 1.04	43.2 1.7	21.43 .18	33.7 0.8	17.41 .15	56.9 0.5	29.71 .15	37.8 0.4	
26.1	39.24 .96	41.2 2.2	21.26 .16	32.7 1.1	17.27 .13	56.3 0.5	29.56 .13	37.4 0.4	
Oct. 6.1	38.32 .86	38.7 2.6	21.11 .14	31.4 1.5	17.15 .10	55.8 0.5	29.44 .10	36.9 0.4	
16.1	37.52 .73	35.9 3.0	20.99 .10	29.7 1.8	17.06 .06	55.3 0.5	29.36 .06	36.6 0.3	
	26.1	36.86- .58	32.8 -3.3	20.91 -0.06	27.7 -2.1	17.02 -0.02	54.8 +0.4	29.31 -0.02	36.3 +0.2
Nov. 5.0	36.36 .41	29.4 3.5	20.87 -0.01	25.4 2.4	17.03 +0.03	54.5 0.3	29.31 +0.03	36.1 +0.1	
15.0	36.04 .22	25.8 3.7	20.89 +0.04	22.8 2.7	17.09 .09	54.3 +0.1	29.36 .08	36.1 -0.1	
25.0	35.92- .02	22.0 3.7	20.96 .10	20.1 2.8	17.20 .14	54.3 -0.1	29.47 .13	36.2 0.3	
Dec. 5.0	35.99+ .18	18.3 3.7	21.08 .15	17.2 2.9	17.36 .19	54.5 0.3	29.62 .18	36.6 0.5	
	14.9	36.27+ .37	14.7 -3.5	21.26 +.20	14.2 -2.9	17.58 +.24	54.9 -0.5	29.83 +.23	37.1 -0.6
	24.9	36.74 .56	11.3 3.2	21.48 .24	11.3 2.8	17.84 .28	55.5 0.7	30.08 .27	37.8 0.8
	34.9	37.39+ .72	8.2 -2.9	21.74 +.28	8.5 -2.7	18.13 +.31	56.2 -0.9	30.36 +.30	38.7 -0.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	Groombridge 2320.		δ Ophiuchi.		τ Herculis.		γ Draconis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h ^m 16 5	[°] ['] +68 4	^h ^m 16 8	[°] ['] - 3 25	^h ^m 16 16	[°] ['] +46 33	^h ^m 16 22	[°] ['] +61 44
	^s	["]	^s	["]	^s	["]	^s	["]
(Dec. 30.9)	59.84 +.38	33.6 -3.3	56.50 +.26	53.1 -1.7	37.71 +.27	13.1 -3.3	34.04 +.31	31.7 -3.4
Jan. 9.9	60.28 .47	30.6 2.9	56.78 .29	54.7 1.6	38.00 .31	10.0 2.9	34.38 .38	28.5 3.0
19.8	60.79 .34	27.9 2.4	57.08 .30	56.4 1.6	38.33 .35	7.3 2.5	34.79 .43	25.7 2.6
29.8	61.36 .60	25.8 1.8	57.39 .31	57.8 1.4	38.69 .37	5.0 2.0	35.25 .48	23.4 2.0
Feb. 8.8	61.98 .63	24.3 1.2	57.70 .32	59.2 1.2	39.08 .39	3.2 1.5	35.75 .51	21.6 1.4
18.8	62.62 +.64	23.5 -0.5	58.02 +.31	60.4 -1.0	39.46 +.39	2.1 -0.8	36.26 +.52	20.5 -0.8
28.7	63.26 .63	23.3 -0.2	58.33 .30	61.2 0.8	39.85 .38	1.6 -0.2	36.78 .51	20.1 -0.1
Mar. 10.7	63.87 .59	23.8 0.9	58.63 .29	61.9 0.5	40.22 .36	1.7 +0.4	37.29 .49	20.4 +0.6
20.7	64.44 .54	25.0 1.5	58.91 .27	62.2 -0.2	40.58 .34	2.4 1.0	37.77 .46	21.3 1.2
30.7	64.96 .47	26.8 2.0	59.17 .25	62.3 0.0	40.90 .31	3.8 1.6	38.21 .42	22.8 1.8
Apr. 9.6	65.40 +.40	29.0 +2.5	59.41 +.23	62.1 +0.3	41.20 +.27	5.6 +2.0	38.60 +.36	24.9 +2.3
19.6	65.76 .32	31.7 2.8	59.63 .21	61.7 0.5	41.45 .23	7.9 2.4	38.94 .30	27.4 2.7
29.6	66.04 .22	34.7 3.1	59.82 .18	61.2 0.6	41.66 .19	10.5 2.7	39.20 .23	30.3 3.0
May 9.5	66.21 .13	37.9 3.2	59.99 .15	60.4 0.8	41.82 .14	13.4 2.9	39.39 .16	33.4 3.2
19.5	66.29 +.03	41.2 3.3	60.12 .12	59.6 0.9	41.93 .09	16.4 3.0	39.51 .08	36.6 3.2
29.5	66.27 -.07	44.5 +3.2	60.23 +.09	58.7 +0.9	42.00 +.04	19.4 +3.0	39.56 +.01	39.9 +3.2
June 8.5	66.16 .16	47.6 3.0	60.31 .06	57.8 0.9	42.02 -.01	22.4 2.9	39.53 -.07	43.1 3.1
18.4	65.95 .25	50.6 2.8	60.35 +.03	56.9 0.9	41.98 .06	25.2 2.7	39.42 .14	46.2 2.9
28.4	65.66 .33	53.2 2.5	60.36 -.01	56.0 0.9	41.90 .10	27.9 2.5	39.25 .21	49.0 2.6
July 8.4	65.30 .40	55.5 2.1	60.34 .04	55.2 0.8	41.78 .15	30.2 2.2	39.01 .27	51.5 2.3
18.4	64.86 -.46	57.4 +1.7	60.28 -.07	54.4 +0.7	41.61 -.19	32.2 +1.8	38.71 -.32	53.6 +1.9
28.3	64.37 .51	58.8 1.2	60.20 .10	53.8 0.6	41.40 .22	33.8 1.4	38.36 .37	55.3 1.5
Aug. 7.3	63.84 .55	59.7 0.7	60.09 .12	53.2 0.5	41.16 .25	35.0 0.9	37.97 .41	56.5 1.0
17.3	63.26 .58	60.2 +0.2	59.96 .14	52.7 0.4	40.90 .27	35.7 +0.5	37.54 .44	57.2 +0.5
27.2	62.67 .59	60.1 -0.4	59.81 .15	52.4 0.3	40.62 .28	36.0 0.0	37.09 .45	57.5 0.0
Sept. 6.2	62.08 -.59	59.5 -0.9	59.65 -.15	52.1 +0.2	40.34 -.28	35.8 -0.4	36.64 -.45	57.2 -0.5
16.2	61.50 .57	58.4 1.4	59.50 .15	52.0 0.0	40.06 .28	35.1 0.9	36.18 .44	56.4 1.0
26.2	60.95 .53	56.7 1.9	59.36 .13	52.0 -0.1	39.79 .26	33.9 1.4	35.75 .42	55.0 1.5
Oct. 6.1	60.44 .48	54.6 2.3	59.24 .11	52.2 0.3	39.54 .23	32.2 1.9	35.34 .38	53.2 2.0
16.1	59.99 .41	52.1 2.7	59.14 .08	52.5 0.4	39.32 .29	30.2 2.3	34.98 .33	50.9 2.5
26.1	59.62 -.32	49.2 -3.1	59.08 -.04	53.1 -0.6	39.16 -.14	27.7 -2.7	34.68 -.26	48.3 -2.9
Nov. 5.1	59.34 .23	45.9 3.4	59.07 +.01	53.8 0.8	39.04 .09	24.9 3.0	34.45 .19	45.2 3.2
15.0	59.17 .12	42.4 3.6	59.10 .06	54.7 1.0	38.99 -.02	21.8 3.2	34.30 .11	41.8 3.5
25.0	59.10 -.01	38.7 3.7	59.18 .11	55.8 1.2	38.99 +.04	18.4 3.4	34.24 -.01	38.3 3.6
Dec. 5.0	59.15 +.11	35.0 3.7	59.32 .16	57.1 1.4	39.07 .11	15.0 3.5	34.27 +.08	34.6 3.7
14.9	59.31 +.22	31.3 -3.6	59.50 +.20	58.6 -1.5	39.21 +.17	11.4 -3.5	34.39 +.17	30.9 -3.6
24.9	59.58 .32	27.7 3.4	59.72 .24	60.1 1.6	39.41 .23	8.0 3.4	34.60 .25	27.3 3.5
34.9	59.96 +.42	24.4 -3.2	59.97 +.27	61.8 -1.6	39.67 +.28	4.8 -3.2	34.90 +.33	23.9 -3.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Scorpii. (Antares.)		β Herculis.		Λ Draconis.		ζ Ophiuchi.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	^h ^m 16 23	[°] ['] —26 12	^h ^m 16 25	[°] ['] +21 42	^h ^m 16 28	[°] ['] +68 58	^h ^m 16 31	[°] ['] —10 21
(Dec. 30.9)	5.00 +.28	16.2 —0.5	46.98 +.24	37.5 —2.7	8.44 +.34	68.3 —3.4	28.79 +.25	37.5 —1.2
Jan. 9.9	5.30 .31	16.6 0.6	47.24 .27	34.9 2.5	8.84 .44	65.1 3.0	29.06 .28	38.7 1.2
19.9	5.63 .34	17.3 0.7	47.52 .29	32.6 2.2	9.33 .52	62.3 2.6	29.35 .30	39.9 1.2
29.8	5.97 .35	18.0 0.8	47.82 .31	30.5 1.9	9.89 .59	60.0 2.0	29.66 .31	41.1 1.2
Feb. 8.8	6.33 .35	18.8 0.8	48.14 .32	28.8 1.5	10.50 .63	58.2 1.4	29.97 .32	42.3 1.1
18.8	6.68 +.35	19.7 —0.8	48.45 +.32	27.6 —1.0	11.15 +.65	57.1 —0.8	30.29 +.32	43.2 —0.9
28.7	7.03 .34	20.5 0.8	48.77 .31	26.8 —0.5	11.81 .65	56.7 —0.1	30.61 .31	44.1 0.7
Mar. 10.7	7.37 .33	21.4 0.8	49.08 .30	26.6 0.0	12.46 .65	57.0 +0.6	30.92 .30	44.7 0.5
20.7	7.69 .31	22.1 0.7	49.37 .28	26.8 +0.5	13.07 .59	57.9 1.2	31.22 .29	45.1 0.3
30.7	8.00 .29	22.8 0.7	49.64 .26	27.5 0.9	13.63 .53	59.4 1.8	31.50 .27	45.4 —0.1
Apr. 9.6	8.28 +.27	23.5 —0.6	49.89 +.24	28.6 +1.3	14.13 +.46	61.5 +2.3	31.76 +.25	45.4 +0.1
19.6	8.54 .25	24.1 0.6	50.12 .21	30.1 1.6	14.55 .38	64.0 2.7	32.00 .23	45.2 0.2
29.6	8.78 .22	24.6 0.5	50.32 .18	31.9 1.9	14.88 .28	67.0 3.0	32.22 .21	44.9 0.2
May 9.6	8.98 .19	25.1 0.5	50.48 .15	33.9 2.1	15.12 .18	70.1 3.2	32.41 .18	44.5 0.3
19.5	9.16 .16	25.6 0.4	50.62 .12	36.0 2.2	15.25 +0.8	73.4 3.5	32.58 .15	44.0 0.3
29.5	9.30 +.12	26.0 —0.4	50.72 +.09	38.3 +2.2	15.28 —.02	76.7 +3.3	32.71 +.12	43.4 +0.6
June 8.5	9.41 .09	26.3 0.5	50.79 .05	40.5 2.2	15.21 .12	80.0 3.2	32.82 .09	42.8 0.6
18.4	9.48 .05	26.7 0.5	50.82 +.01	42.6 2.1	15.04 .22	83.1 3.0	32.88 .05	42.2 0.6
28.4	9.51 +.01	26.9 0.2	50.81 —.02	44.7 1.9	14.78 .31	85.9 2.7	32.92 +.02	41.6 0.6
July 8.4	9.50 —.03	27.1 0.2	50.77 .06	46.5 1.7	14.43 .39	88.4 2.5	32.91 —.02	41.1 0.5
18.4	9.45 —.06	27.3 —0.1	50.70 —.09	48.1 +1.5	14.01 —.46	90.6 +1.9	32.88 —.05	40.5 +0.5
28.3	9.37 .10	27.4 0.0	50.59 .12	49.5 1.2	13.51 .52	92.3 1.5	32.80 .09	40.1 0.5
Aug. 7.3	9.26 .13	27.3 +0.1	50.46 .15	50.6 0.9	12.96 .57	93.6 1.0	32.70 .11	39.6 0.4
17.3	9.12 .15	27.2 0.2	50.29 .17	51.4 0.6	12.37 .60	94.3 +0.5	32.57 .14	39.2 0.4
27.3	8.96 .16	27.0 0.3	50.12 .18	51.8 +0.3	11.75 .62	94.5 0.0	32.43 .15	38.9 0.3
Sept. 6.2	8.79 —.17	26.6 +0.4	49.93 —.18	51.9 —0.1	11.12 —.63	94.3 —0.5	32.27 —.16	38.6 +0.3
16.2	8.62 .17	26.2 0.5	49.75 .18	51.6 0.4	10.49 .62	93.4 1.0	32.11 .16	38.4 0.2
26.2	8.45 .15	25.7 0.5	49.57 .17	51.1 0.8	9.89 .59	92.1 1.5	31.96 .14	38.2 +0.1
Oct. 6.1	8.31 .13	25.1 0.6	49.41 .15	50.1 1.1	9.32 .54	90.3 2.0	31.82 .12	38.2 0.0
16.1	8.20 .09	24.5 0.6	49.27 .12	48.9 1.4	8.81 .47	88.0 2.5	31.72 .09	38.2 —0.1
26.1	8.13 —.05	23.9 +0.6	49.18 —.08	47.3 —1.7	8.37 —.39	85.4 —2.9	31.64 —.05	38.4 —0.2
Nov. 5.1	8.11 .00	23.4 0.5	49.12 —.03	45.4 2.0	8.02 .30	82.3 3.2	31.61 —.01	38.7 0.4
15.0	8.14 +.06	22.9 0.4	49.11 +.02	43.2 2.2	7.78 .19	79.0 3.5	31.63 +.04	39.1 0.5
25.0	8.22 .11	22.6 0.2	49.15 .07	40.8 2.5	7.64 —.08	75.4 3.6	31.69 .09	39.8 0.7
Dec. 5.0	8.36 .17	22.4 +0.1	49.24 .12	38.2 2.6	7.62 +.04	71.7 3.7	31.81 .14	40.6 0.9
15.0	8.56 +.22	22.5 —0.1	49.39 +.17	35.5 —2.7	7.72 +.16	68.0 —3.7	31.97 +.19	41.5 —1.0
24.9	8.80 .26	22.7 0.3	49.58 .21	32.8 2.7	7.94 .28	64.4 3.5	32.18 .23	42.6 1.1
34.9	9.08 +.30	23.0 —0.5	49.81 +.25	30.2 —2.6	8.27 +.38	60.9 —3.5	32.43 +.26	43.8 —1.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Trianguli Australia.		γ Herculis.		κ Ophiuchi.		ε Ursæ Minoris.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h ^m 16 37	[°] ['] —68 50	^h ^m 16 39	[°] ['] +39 6	^h ^m 16 52	[°] ['] + 9 31	^h ^m 16 56	[°] ['] +82 11
(Dec. 30.9)	^s 43.41 +.57	^s 16.0 +1.8	^s 20.93 +.23	^s 50.1 —3.2	^s 47.04 +.23	^s 56.5 —2.1	^s 21.65 +.52	^s 67.7 —3.4
Jan. 9.9	44.02 .65	14.3 1.5	21.18 .27	47.1 2.9	47.27 .25	54.4 2.1	22.31 .80	64.5 3.1
19.8	44.70 .71	13.0 1.1	21.47 .30	44.3 2.6	47.54 .27	52.4 1.9	23.25 1.06	61.6 2.6
29.8	45.44 .76	12.2 0.7	21.79 .33	41.9 2.1	47.82 .29	50.6 1.6	24.42 1.27	59.2 2.1
Feb. 8.8	46.22 .79	11.7 +0.2	22.13 .35	40.0 1.6	48.12 .30	49.1 1.3	25.79 1.44	57.3 1.6
18.8	47.01 +.80	11.7 —0.2	22.49 +.35	38.7 —1.1	48.42 +.30	47.9 —1.0	27.29 +1.55	55.9 —1.0
28.7	47.81 .79	12.1 0.6	22.84 .35	37.9 —0.5	48.72 .30	47.1 0.7	28.88 1.60	55.3 —0.3
Mar. 10.7	48.59 .77	12.8 0.9	23.19 .34	37.7 +0.1	49.02 .30	46.6 —0.3	30.48 1.59	55.3 +0.3
20.7	49.35 .74	13.9 1.3	23.52 .32	38.2 0.7	49.32 .29	46.6 +0.1	32.04 1.52	55.9 0.9
30.7	50.07 .70	15.4 1.6	23.83 .30	39.2 1.3	49.60 .27	46.9 0.5	33.50 1.39	57.2 1.5
Apr. 9.6	50.75 +.65	17.1 —1.9	24.12 +.27	40.7 +1.7	49.86 +.25	47.6 +0.8	34.81 +1.22	59.0 +2.1
19.6	51.36 .58	19.1 2.1	24.38 .24	42.7 2.2	50.10 .23	48.7 1.1	35.93 1.01	61.3 2.5
29.6	51.91 .51	21.3 2.2	24.60 .20	45.1 2.5	50.32 .21	49.9 1.4	36.82 .76	64.0 2.9
May 9.5	52.39 .43	23.7 2.4	24.79 .16	47.7 2.7	50.52 .18	51.4 1.6	37.45 .50	67.0 3.1
19.5	52.78 .34	26.2 2.5	24.93 .12	50.5 2.8	50.68 .15	53.1 1.7	37.81 +.22	70.2 3.2
29.5	53.08 +.25	28.7 —2.6	25.03 +.06	53.4 +2.9	50.82 +.12	54.8 +1.7	37.89 —.06	73.5 +3.2
June 8.5	53.29 .16	31.3 2.5	25.09 +.04	56.3 2.8	50.93 .09	56.5 1.7	37.69 .34	76.7 3.1
18.4	53.39 +.06	33.8 2.5	25.11 —.01	59.1 2.7	51.00 .05	58.3 1.7	37.21 .61	79.8 3.0
28.4	53.40 —.04	36.2 2.3	25.08 .05	61.7 2.5	51.03 +.02	59.9 1.6	36.47 .86	82.8 2.8
July 8.4	53.31 .14	38.4 2.1	25.00 .09	64.1 2.2	51.03 —.02	61.4 1.4	35.49 1.09	85.5 2.5
18.4	53.12 —.23	40.3 —1.8	24.89 —.13	66.2 +1.9	50.99 —.05	62.8 +1.2	34.30 —1.30	87.8 +2.1
28.3	52.84 .32	42.0 1.5	24.74 .17	68.0 1.6	50.92 .09	64.0 1.0	32.91 1.47	89.8 1.7
Aug. 7.3	52.48 .39	43.3 1.1	24.55 .20	69.4 1.2	50.81 .12	65.0 0.8	31.36 1.61	91.3 1.3
17.3	52.06 .44	44.1 0.6	24.33 .22	70.4 0.8	50.68 .14	65.8 0.6	29.69 1.72	92.3 0.8
27.2	51.60 .48	44.5 —0.2	24.10 .24	70.9 +0.3	50.53 .16	66.3 0.4	27.93 1.79	92.9 +0.3
Sept. 6.2	51.10 —.49	44.4 +0.3	23.86 —.25	71.1 —0.1	50.36 —.17	66.6 +0.2	26.12 —1.82	92.9 —0.2
16.2	50.61 .48	43.9 0.8	23.61 .24	70.7 0.6	50.19 .17	66.7 —0.1	24.30 1.81	92.4 0.7
26.2	50.14 .45	42.9 1.2	23.36 .23	69.9 1.0	50.02 .16	66.5 0.3	22.51 1.76	91.5 1.2
Oct. 6.1	49.72 .39	41.4 1.6	23.14 .22	68.7 1.5	49.86 .14	66.0 0.6	20.80 1.67	90.1 1.7
16.1	49.36 .31	39.6 2.0	22.95 .18	67.0 1.9	49.73 .12	65.3 0.8	19.19 1.53	88.2 2.1
26.1	49.09 —.21	37.4 +2.3	22.79 —.14	64.9 —2.3	49.63 —.08	64.3 —1.1	17.75 —1.35	85.8 —2.5
Nov. 5.1	48.93 —.10	35.0 2.5	22.67 .09	62.5 2.6	49.56 —.04	63.1 1.4	16.50 1.13	83.1 2.9
15.0	48.89 +.02	32.4 2.6	22.62 —.03	59.7 2.9	49.55 +.01	61.6 1.6	15.49 .88	80.1 3.2
25.0	48.97 .15	29.8 2.6	22.61 +.05	56.7 3.1	49.57 .05	59.9 1.8	14.75 .60	76.8 3.4
Dec. 5.0	49.19 .27	27.2 2.5	22.67 .09	53.5 3.2	49.65 .10	58.0 2.0	14.29 —.30	73.3 3.5
14.9	49.52 +.39	24.8 +2.3	22.78 +.14	50.2 —3.3	49.78 +.15	56.0 —2.1	14.15 +.01	69.8 —3.5
24.9	49.97 .50	22.6 2.0	22.96 .19	46.9 3.2	49.95 .19	53.9 2.1	14.32 .33	66.3 3.4
34.9	50.53 +.60	20.7 +1.7	23.18 +.24	43.7 —3.1	50.16 +.25	51.8 —2.1	14.80 +.63	62.9 —3.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	<i>δ</i> Herculis.		<i>α^1</i> Herculis.		<i>δ</i> Ophiuchi.		<i>β</i> Draconis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	^h ^m 16 57	[°] +33 42	^h ^m 17 9	[°] +14 30	^h ^m 17 20	[°] -24 4	^h ^m 17 28	[°] +52 22
	^s "	^s "	^s "	^s "	^s "	^s "	^s "	^s "
(Dec. 30.9)	47.29 +.20	49.4 -3.0	56.42 +.20	17.3 -2.3	4.20 +.23	55.2 -0.2	4.62 +.17	26.2 -3.4
Jan. 9.9	47.52 .25	46.4 2.8	56.64 .23	15.0 2.2	4.45 .26	55.4 0.3	4.83 .24	22.8 3.2
19.9	47.79 .28	43.7 2.5	56.88 .26	12.9 2.0	4.73 .29	55.7 0.4	5.10 .29	19.7 3.0
29.8	48.08 .31	41.4 2.2	57.16 .28	11.0 1.8	5.04 .31	56.1 0.4	5.41 .34	16.9 2.6
Feb. 8.8	48.40 .32	39.4 1.7	57.45 .29	9.3 1.5	5.36 .33	56.5 0.4	5.77 .37	14.5 2.0
18.8	48.73 +.33	37.9 -1.2	57.75 +.30	8.0 -1.1	5.69 .34	56.9 -0.4	6.16 +.40	12.7 -1.5
28.8	49.06 .33	37.0 0.7	58.05 .30	7.2 0.7	6.03 .34	57.3 0.4	6.56 .41	11.6 0.8
Mar. 10.7	49.39 .33	36.7 -0.1	58.36 .30	6.7 -0.2	6.37 .34	57.7 0.3	6.98 .41	11.0 -0.2
20.7	49.72 .32	36.9 +0.5	58.65 .29	6.7 +0.2	6.70 .33	58.0 0.2	7.39 .40	11.2 +0.4
30.7	50.02 .30	37.7 1.0	58.94 .28	7.1 0.6	7.03 .32	58.2 0.2	7.79 .39	11.9 1.1
Apr. 9.6	50.31 +.28	39.0 +1.5	59.21 +.26	7.9 +1.0	7.34 +.31	58.4 -0.2	8.17 +.36	13.3 +1.6
19.6	50.58 .25	40.8 1.9	59.47 .24	9.1 1.3	7.64 .29	58.5 0.1	8.52 .33	15.3 2.1
29.6	50.81 .21	43.0 2.3	59.70 .22	10.6 1.6	7.91 .27	58.6 -0.1	8.83 .29	17.7 2.6
May 9.6	51.01 .18	45.4 2.5	59.91 .19	12.3 1.8	8.17 .24	58.6 0.0	9.09 .24	20.4 2.9
19.5	51.18 .15	48.1 2.7	60.09 .16	14.2 1.9	8.40 .21	58.6 0.0	9.31 .19	23.5 3.1
29.5	51.30 +.11	50.8 +2.8	60.24 +.13	16.2 +2.0	8.59 +.18	58.7 -0.1	9.47 +.13	26.7 +3.3
June 8.5	51.39 .07	53.6 2.8	60.36 .10	18.3 2.0	8.76 .14	58.7 0.1	9.57 .07	30.0 3.3
18.5	51.43 +.02	56.3 2.7	60.44 .06	20.3 1.9	8.88 .10	58.8 0.1	9.62 +.01	33.3 3.2
28.4	51.44 -0.2	58.9 2.5	60.48 +.02	22.2 1.8	8.96 .06	58.9 0.1	9.60 -0.4	36.5 3.1
July 8.4	51.40 .06	61.4 2.3	60.49 -0.1	24.1 1.7	9.00 +.02	59.0 0.1	9.53 .10	39.5 2.9
18.4	51.31 -1.0	63.5 +2.0	60.46 -0.5	25.7 +1.5	9.00 -0.2	59.1 -0.1	9.39 -1.6	42.2 +2.6
28.3	51.19 .14	65.4 1.7	60.39 .09	27.2 1.3	8.96 .06	59.2 0.1	9.21 .21	44.6 2.2
Aug. 7.3	51.04 .17	66.9 1.3	60.28 .12	28.4 1.1	8.88 .10	59.3 -0.1	8.97 .26	46.7 1.8
17.3	50.85 .20	68.0 0.9	60.15 .14	29.3 0.8	8.77 .14	59.3 0.0	8.70 .29	48.3 1.4
27.3	50.64 .22	68.8 0.5	60.00 .16	30.0 0.5	8.62 .15	59.3 0.0	8.38 .32	49.5 0.9
Sept. 6.2	50.42 -0.22	69.1 +0.1	59.82 -0.18	30.4 +0.3	8.46 -0.17	59.2 +0.1	8.05 -0.34	50.1 +0.4
16.2	50.19 .22	69.0 -0.3	59.64 .18	30.5 0.0	8.28 .17	59.0 0.2	7.70 .35	50.3 -0.1
26.2	49.97 .21	68.5 0.7	59.46 .17	30.3 -0.3	8.11 .17	58.8 0.2	7.35 .35	50.0 0.5
Oct. 6.2	49.76 .20	67.5 1.2	59.30 .16	29.8 0.6	7.94 .15	58.5 0.3	7.01 .33	49.2 1.1
16.1	49.57 .17	66.2 1.6	59.15 .13	29.0 0.9	7.80 .13	58.2 0.3	6.70 .30	47.8 1.6
26.1	49.41 -0.13	64.4 -2.0	59.03 -0.10	28.0 -1.2	7.69 -0.09	57.8 +0.4	6.41 -0.26	46.0 -2.0
Nov. 5.1	49.30 .09	62.2 2.3	58.95 .06	26.6 1.5	7.61 -0.05	57.4 0.3	6.18 .21	43.7 2.4
15.0	49.23 -0.04	59.8 2.6	58.91 -0.02	25.0 1.7	7.59 .00	57.1 0.3	6.00 .15	41.1 2.8
25.0	49.22 +0.01	57.0 2.8	58.91 +0.03	23.1 1.9	7.61 +0.05	56.8 0.2	5.88 .08	38.0 3.1
Dec. 5.0	49.26 .07	54.1 3.0	58.97 .08	21.0 2.1	7.69 .10	56.6 +0.1	5.83 -0.01	34.8 3.3
15.0	49.36 +.13	51.0 -3.1	59.08 +.13	18.8 -2.3	7.82 +.15	56.6 0.0	5.86 +0.06	31.3 -3.5
24.9	49.51 .18	47.9 3.1	59.23 .17	16.5 2.3	8.00 .20	56.6 -0.1	5.95 .13	27.8 3.5
34.9	49.71 +.22	44.8 -3.0	59.41 +.20	14.2 -2.3	8.22 +.24	56.8 -0.2	6.12 +.20	24.3 -3.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ophiuchi.		ω Draconis.		μ Herculis.		ψ^1 Draconis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 17 30	° ' " +12 37	h m 17 37	° ' " +68 47	h m 17 42	° ' " +27 46	h m 17 43	° ' " +72 11
(Dec. 30.9)	8.53 +.19	56.4 -2.2	29.72 +.20	67.6 -3.7	24.76 +.17	40.6 -2.9	41.64 +.15	45.8 -3.6
Jan. 9.9	8.73 .21	54.2 2.1	29.95 .26	64.1 3.4	24.94 .20	37.8 2.7	41.87 .29	42.3 3.4
19.9	8.96 .24	52.1 2.0	30.28 .37	60.9 3.1	25.16 .24	35.2 2.3	42.22 .41	39.0 3.1
29.9	9.22 .27	50.3 1.7	30.71 .47	58.0 2.7	25.41 .27	32.8 2.2	42.69 .52	36.0 2.7
Feb. 8.8	9.50 .28	48.7 1.4	31.22 .54	55.5 2.2	25.69 .29	30.7 1.8	43.26 .61	33.6 2.2
18.8	9.79 +.30	47.4 -1.1	31.79 +.59	53.7 -1.6	25.99 +.30	29.1 -1.4	43.91 +.68	31.6 -1.6
28.8	10.09 .30	46.5 0.7	32.41 .63	52.4 0.9	26.30 .31	27.9 0.9	44.61 .72	30.3 1.0
Mar. 10.7	10.39 .30	46.0 -0.3	33.05 .64	51.8 -0.3	26.61 .32	27.3 -0.4	45.35 .74	29.6 -0.3
20.7	10.69 .30	45.9 +0.1	33.69 .64	51.9 +0.4	26.93 .31	27.2 +0.2	46.10 .74	29.6 +0.3
30.7	10.98 .29	46.2 0.5	34.32 .61	52.6 1.1	27.24 .30	27.7 0.7	46.83 .71	30.2 1.0
Apr. 9.7	11.26 +.27	47.0 +1.0	34.91 +.56	54.0 +1.7	27.54 +.29	28.7 +1.2	47.52 +.66	31.5 +1.6
19.6	11.53 .26	48.1 1.3	35.44 .51	56.0 2.2	27.82 .27	30.1 1.6	48.16 .59	33.4 2.1
29.6	11.78 .24	49.5 1.5	35.92 .43	58.4 2.6	28.08 .25	31.9 2.0	48.71 .50	35.8 2.6
May 9.6	12.00 .21	51.2 1.8	36.31 .35	61.2 3.0	28.32 .22	34.1 2.3	49.17 .41	38.6 2.9
19.6	12.20 .18	53.0 1.9	36.61 .25	64.4 3.2	28.53 .19	36.5 2.5	49.52 .30	41.7 3.2
29.5	12.37 +.15	55.0 +2.0	36.82 +.16	67.7 +3.4	28.70 +.16	39.1 +2.6	49.76 +.18	45.0 +3.3
June 8.5	12.51 .12	57.0 2.0	36.92 +.05	71.2 3.4	28.84 .12	41.7 2.7	49.88 +.06	48.4 3.4
18.5	12.61 .08	59.0 1.9	36.92 -.05	74.6 3.4	28.94 .08	44.4 2.6	49.88 -.06	51.8 3.4
28.4	12.67 .04	60.9 1.8	36.82 .15	78.0 3.2	28.99 +.04	47.0 2.5	49.75 .18	55.1 3.3
July 8.4	12.70 +.01	62.7 1.7	36.62 .25	81.1 3.0	29.01 -.01	49.5 2.3	49.51 .30	58.3 3.0
18.4	12.68 -.03	64.4 +1.6	36.32 -.34	84.0 +2.7	28.98 -.05	51.7 +2.2	49.15 -.41	61.2 +2.8
28.4	12.63 .07	65.9 1.4	35.94 .42	86.6 2.4	28.91 .09	53.8 1.9	48.69 .51	63.8 2.4
Aug. 7.3	12.54 .10	67.1 1.1	35.48 .49	88.8 2.0	28.80 .13	55.5 1.6	48.14 .59	66.0 2.0
17.3	12.42 .14	68.1 0.9	34.96 .55	90.5 1.5	28.65 .16	56.9 1.3	47.51 .66	67.9 1.6
27.3	12.28 .16	68.9 0.6	34.37 .60	91.8 1.1	28.48 .19	58.0 0.9	46.81 .72	69.2 1.1
Sept. 6.3	12.11 -.17	69.4 +0.4	33.76 -.63	92.6 +0.5	28.28 -.20	58.7 +0.5	46.07 -.76	70.1 +0.6
16.2	11.93 .18	69.6 +0.1	33.11 .65	92.9 0.0	28.07 .21	59.0 +0.1	45.29 .78	70.5 +0.1
26.2	11.76 .18	69.5 -.02	32.46 .64	92.7 -.05	27.86 .21	59.0 -.03	44.51 .77	70.3 -.04
Oct. 6.2	11.58 .16	69.2 0.5	31.83 .62	91.9 1.0	27.65 .20	58.5 0.7	43.74 .75	69.6 1.0
16.1	11.43 .14	68.6 0.8	31.22 .58	90.6 1.5	27.45 .18	57.6 1.1	43.01 .71	68.4 1.5
26.1	11.30 -.11	67.6 -1.1	30.67 -.52	88.9 -2.0	27.29 -.15	56.4 -1.4	42.33 -.64	66.7 -1.9
Nov. 5.1	11.20 .08	66.4 1.3	30.18 .45	86.6 2.5	27.16 .11	54.7 1.8	41.72 .56	64.6 2.4
15.1	11.15 -.03	65.0 1.6	29.78 .36	83.9 2.9	27.06 .07	52.7 2.1	41.21 .54	61.9 2.8
25.0	11.14 +.01	63.2 1.8	29.47 .25	80.9 3.2	27.02 -.02	50.5 2.4	40.81 .46	58.9 3.1
Dec. 5.0	11.18 .06	61.3 2.0	29.27 .14	77.5 3.4	27.02 +.03	47.9 2.6	40.53 .22	55.7 3.4
15.0	11.27 +.11	59.2 -2.1	29.19 -.02	74.0 -3.6	27.07 +.08	45.2 -2.8	40.39 -.07	52.2 -3.5
25.0	11.40 .13	57.1 2.2	29.22 +.09	70.4 3.6	27.18 .13	42.4 2.9	40.39 +.06	48.6 3.6
34.9	11.57 +.20	54.9 -2.2	29.38 +.21	66.9 -3.6	27.33 +.18	39.6 -3.0	40.52 +.21	45.1 -3.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Draconis.		γ^2 Sagittarii.		μ Sagittarii.		η Serpentis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination South.
	h m 17 54	° ' " +51 29	h m 17 59	° ' " -30 25	h m 18 7	° ' " -21 5	h m 18 15	° ' " - 2 55
Jan. 0.0	11.06 +.13	52.8 -3.5	10.82 +.20	37.0 +0.3	35.63 +.18	14.9 -0.2	58.19 +.15	38.0 -1.2
9.9	11.23 .20	49.4 3.3	11.04 .24	36.7 0.3	35.82 .22	15.1 0.2	58.36 .18	39.2 1.2
19.9	11.45 .25	46.1 3.1	11.30 .28	36.4 0.2	36.06 .25	15.3 0.2	58.56 .22	40.4 1.2
29.9	11.74 .30	43.2 2.7	11.59 .30	36.2 0.2	36.32 .27	15.5 0.2	58.79 .24	41.5 1.1
Feb. 8.9	12.06 .34	40.7 2.3	11.91 .32	36.0 0.1	36.61 .29	15.7 0.2	59.05 .26	42.5 0.9
18.8	12.42 +.37	38.7 -1.7	12.24 +.34	35.9 +0.1	36.91 +.31	15.8 -0.1	59.32 +.28	43.3 -0.7
28.8	12.81 .40	37.3 1.1	12.59 .35	35.8 +0.1	37.23 .32	16.0 -0.1	59.60 .29	43.9 0.4
Mar. 10.8	13.21 .40	36.5 -0.5	12.94 .35	35.8 0.0	37.55 .33	16.0 0.0	59.90 .30	44.2 -0.2
20.8	13.62 .40	36.3 +0.2	13.29 .35	35.7 0.0	37.88 .33	15.9 +0.1	60.20 .30	44.2 +0.1
30.7	14.02 .40	36.9 0.8	13.64 .35	35.7 0.0	38.20 .33	15.7 0.2	60.50 .30	43.9 0.4
Apr. 9.7	14.41 +.38	38.0 +1.4	13.99 +.34	35.6 0.0	38.52 +.32	15.4 +0.3	60.79 +.29	43.4 +0.6
19.7	14.77 .35	39.7 2.0	14.32 .33	35.6 0.0	38.84 .31	15.1 0.3	61.08 .28	42.7 0.9
29.6	15.11 .31	41.9 2.4	14.64 .31	35.6 0.0	39.14 .29	14.8 0.4	61.36 .27	41.7 1.1
May 9.6	15.40 .27	44.6 2.8	14.94 .29	35.7 -0.1	39.42 .27	14.4 0.4	61.62 .25	40.6 1.2
19.6	15.65 .22	47.5 3.1	15.22 .26	35.8 0.1	39.68 .25	14.0 0.4	61.86 .23	39.3 1.3
29.6	15.85 +.17	50.7 +3.2	15.46 +.23	36.0 -0.2	39.91 +.22	13.6 +0.4	62.08 +.20	38.0 +1.3
June 8.5	15.99 .11	54.0 3.3	15.67 .19	36.2 0.3	40.12 .19	13.2 0.3	62.27 .17	36.6 1.3
18.5	16.07 +.06	57.4 3.3	15.84 .15	36.5 0.3	40.29 .15	13.0 0.2	62.43 .14	35.3 1.3
28.5	16.10 .00	60.6 3.2	15.97 .11	36.9 0.4	40.41 .11	12.8 0.2	62.54 .10	34.1 1.2
July 8.4	16.06 -0.06	63.8 3.0	16.05 .08	37.3 0.4	40.50 .07	12.6 0.1	62.62 .06	32.9 1.1
18.4	15.97 -1.12	66.7 +2.8	16.09 +0.1	37.8 -0.5	40.54 +0.2	12.6 +0.1	62.66 +0.2	31.8 +1.0
18.4	15.82 .18	69.4 2.5	16.08 -0.4	38.2 0.4	40.54 -0.2	12.5 0.0	62.66 -0.2	30.9 0.9
Aug. 7.4	15.61 .23	71.7 2.1	16.02 .08	38.6 0.4	40.49 .07	12.5 0.0	62.61 .06	30.1 0.7
17.3	15.36 .27	73.6 1.7	15.92 .12	39.0 0.4	40.40 .10	12.6 0.0	62.53 .10	29.4 0.6
27.3	15.07 .30	75.1 1.3	15.78 .15	39.3 0.3	40.28 .13	12.6 0.0	62.42 .13	28.9 0.4
Sept. 6.3	14.76 -0.33	76.1 +0.8	15.62 -1.17	39.5 -0.1	40.14 -1.16	12.6 0.0	62.28 -1.15	28.5 +0.3
16.3	14.42 .34	76.7 +0.3	15.44 .19	39.6 0.0	39.97 .17	12.6 0.0	62.12 .16	28.3 +0.2
26.2	14.08 .34	76.7 -0.2	15.25 .19	39.6 +0.1	39.80 .17	12.6 +0.1	61.95 .17	28.2 0.0
Oct. 6.2	13.74 .33	76.2 0.7	15.06 .18	39.4 0.2	39.62 .17	12.5 0.1	61.78 .16	28.3 -0.1
16.2	13.41 .31	75.2 1.2	14.89 .16	39.0 0.4	39.46 .15	12.4 0.1	61.62 .15	28.5 0.3
26.2	13.12 -0.27	73.7 -1.7	14.74 -1.13	38.6 +0.5	39.32 -1.12	12.3 +0.2	61.48 -1.13	28.8 -0.4
Nov. 5.1	12.86 .23	71.8 2.2	14.63 .09	38.1 0.6	39.22 .09	12.1 0.2	61.38 .10	29.4 0.6
15.1	12.66 .18	69.4 2.6	14.57 -0.4	37.5 0.6	39.15 -0.4	12.0 0.1	61.30 .06	30.0 0.7
25.1	12.52 .12	66.6 3.0	14.56 +0.1	36.9 0.6	39.13 +0.1	11.8 +0.1	61.27 -0.1	30.8 0.9
Dec. 5.0	12.43 -0.05	63.6 3.2	14.59 .06	36.3 0.5	39.16 .05	11.8 0.0	61.28 +0.4	31.8 1.0
15.0	12.42 +0.02	60.2 -3.4	14.69 +1.2	35.7 +0.5	39.24 +1.0	11.8 0.0	61.33 +0.8	32.8 -1.1
25.0	12.48 .09	56.8 3.4	14.83 .17	35.2 0.5	39.36 .15	11.8 -0.1	61.44 .12	34.0 1.2
35.0	12.60 +1.15	53.3 -3.5	15.02 +1.21	34.8 +0.3	39.54 +1.19	11.9 -0.1	61.58 +1.16	35.2 -1.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Aquilæ.		α Lyrae. (Vega.)		β Lyrae.		σ Sagittarii.		
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	
	^h ^m 18 29	[°] ['] — 8 18	^h ^m 18 33	[°] ['] +38 40	^h ^m 18 46	[°] ['] +33 14	^h ^m 18 48	[°] ['] —26 25	
	^s	["]	^s	["]	^s	["]	^s	["]	
Jan.	0.0	35.54 +.14	65.1 —.09	25.78 +.10	68.7 —3.1	15.49 +.09	28.5 —2.9	52.14 +.14	35.4 +.03
	10.0	35.71 .18	66.0 .08	25.90 .14	65.6 3.0	15.60 .13	25.6 2.9	52.30 .18	35.1 .03
	19.9	35.90 .21	66.8 .08	26.07 .19	62.6 2.9	15.75 .17	22.8 2.7	52.50 .22	34.7 .03
	29.9	36.13 .24	67.6 .07	26.28 .23	59.8 2.6	15.95 .21	20.2 2.5	52.74 .25	34.4 .03
Feb.	8.9	36.38 .26	68.2 .06	26.53 .27	57.4 2.3	16.18 .24	17.8 2.2	53.00 .28	34.1 .03
	18.8	36.63 +.28	68.8 —.05	26.81 +.30	55.3 —1.8	16.44 +.27	15.8 —1.8	53.29 +.30	33.7 +.04
	28.8	36.93 .29	69.1 —.02	27.12 .32	53.7 1.3	16.72 .30	14.3 1.3	53.60 .32	33.3 .04
Mar.	10.8	37.23 .30	69.3 .00	27.45 .33	52.7 0.7	17.03 .31	13.3 0.7	53.92 .33	32.9 .04
	20.8	37.53 .31	69.2 +.02	27.78 .34	52.3 —0.1	17.35 .32	12.8 —0.2	54.25 .33	32.4 .03
	30.7	37.83 .31	68.9 .04	28.13 .34	52.5 +0.3	17.67 .33	12.8 +0.4	54.58 .34	31.9 .03
Apr.	9.7	38.14 +.30	68.4 +.06	28.47 +.34	53.2 +1.1	18.00 +.33	13.6 +0.9	54.92 +.34	31.4 +.06
	19.7	38.44 .29	67.7 0.8	28.80 .32	54.6 1.6	18.32 .32	14.7 1.4	55.26 .34	30.9 .06
	29.7	38.73 .28	66.8 0.9	29.12 .30	56.4 2.0	18.63 .30	16.4 1.9	55.59 .33	30.4 .05
May	9.6	39.00 .27	65.8 1.0	29.41 .28	58.6 2.4	18.92 .28	18.6 2.3	55.91 .31	29.9 .03
	19.6	39.26 .25	64.7 1.1	29.67 .25	61.2 2.7	19.19 .25	21.0 2.6	56.21 .29	29.4 .04
	29.6	39.50 +.22	63.6 +1.1	29.90 +.21	64.1 +3.0	19.43 +.22	23.7 +2.8	56.49 +.26	29.1 +.03
June	8.5	39.70 .19	62.5 1.1	30.10 .17	67.2 3.1	19.63 .18	26.6 2.9	56.74 .23	28.8 .02
	18.5	39.88 .15	61.4 1.1	30.24 .12	70.3 3.1	19.80 .14	29.6 3.0	56.95 .19	28.7 +.01
	28.5	40.01 .12	60.4 1.0	30.34 .07	73.4 3.1	19.92 .10	32.6 3.0	57.12 .15	28.6 .00
July	8.5	40.11 .08	59.4 0.9	30.39 +.02	76.5 3.0	19.99 +.05	35.6 2.9	57.25 .11	28.7 —.01
	18.4	40.16 +.03	58.6 +.08	30.39 —.03	79.4 +2.8	20.01 .00	38.4 +2.7	57.34 +.06	28.9 —.02
	28.4	40.17 —.01	57.9 0.6	30.34 .08	82.2 2.6	19.99 —.05	41.0 2.3	57.37 +.01	29.1 .03
Aug.	7.4	40.14 .05	57.3 0.5	30.24 .12	84.6 2.3	19.91 .09	43.4 2.2	57.36 —.03	29.4 .03
	17.4	40.07 .09	56.8 0.4	30.10 .16	86.7 1.9	19.80 .14	45.4 1.9	57.30 .08	29.8 .04
	27.3	39.97 .12	56.5 0.3	29.92 .20	88.5 1.5	19.64 .17	47.2 1.6	57.20 .12	30.1 .03
Sept.	6.3	39.84 —.14	56.2 +.02	29.70 —.22	89.8 +1.1	19.46 —.20	48.6 +1.2	57.07 —.15	30.4 —.03
	16.3	39.68 .16	56.1 +.01	29.46 .24	90.8 0.7	19.25 .22	49.6 0.8	56.91 .17	30.7 .02
	26.2	39.52 .17	56.0 .00	29.21 .25	91.3 +0.3	19.02 .23	50.1 +0.4	56.73 .18	30.8 —.01
Oct.	6.2	39.35 .16	56.1 —.01	28.96 .25	91.3 —0.2	18.79 .23	50.3 —0.1	56.55 .18	30.9 .00
	16.2	39.19 .15	56.2 .02	28.71 .24	90.9 0.7	18.57 .22	50.0 0.5	56.37 .17	30.9 +.01
	26.2	39.05 —.13	56.4 —.03	28.48 —.22	89.9 —1.2	18.36 —.20	49.2 —1.0	56.21 —.15	30.8 +.02
Nov.	5.1	38.93 .10	56.7 0.4	28.28 .18	88.6 1.6	18.17 .17	48.1 1.4	56.08 .12	30.6 .02
	15.1	38.85 .06	57.1 0.5	28.11 .14	86.8 2.0	18.02 .13	46.5 1.8	55.98 .08	30.3 .03
	25.1	38.81 —.02	57.7 0.6	27.99 .10	84.6 2.4	17.90 .09	44.5 2.1	55.92 —.03	30.0 .03
Dec.	5.1	38.82 +.03	58.3 0.7	27.91 —.05	82.1 2.7	17.83 —.05	42.2 2.4	55.91 +.01	29.6 .04
	15.0	38.87 +.07	59.0 —.07	27.89 +.01	79.3 —2.9	17.81 .00	39.7 —2.6	55.95 +.06	29.2 +.04
	25.0	38.96 .11	59.8 0.8	27.92 .06	76.3 3.0	17.84 +.05	36.9 2.8	56.03 .11	28.9 .04
	35.0	39.09 +.15	60.6 —.09	28.01 +.11	73.3 —3.1	17.92 +.10	34.1 —2.9	56.16 +.15	28.5 +.03

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	50 Draconis.		σ Octantis.		ζ Aquilæ.		δ Sagittarii.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	h m 18 49	° ' " +75 18	h m 18	° ' " -89 15	h m 19 0	° ' " +13 42	h m 19 11	° ' " -19 8
Jan. 0.0	35.53 -10	40.4 -3.4	53 24.4+ 3.6	38.5 +3.5	39.81 +0.9	31.5 -2.0	35.97 +1.1	16.9 0.0
10.0	35.53 +.08	36.9 3.4	53 29.4 6.6	35.0 3.4	39.92 .13	29.5 2.0	36.10 .15	16.9 0.0
20.0	35.69 .24	33.5 3.3	53 37.6 9.6	31.7 3.3	40.07 .17	27.5 1.9	36.27 .18	16.9 0.0
29.9	36.01 .40	30.2 3.1	53 48.6 12.3	28.5 3.0	40.25 .20	25.7 1.7	36.47 .21	16.9 +0.1
Feb. 8.9	36.49 .54	27.3 2.8	54 2.1 14.6	25.6 2.7	40.46 .23	24.1 1.5	36.70 .24	16.8 0.1
18.9	37.09 +.66	24.7 -2.3	54 17.6+16.5	23.1 +2.3	40.70 +.25	22.7 -1.2	36.96 +.26	16.6 +0.2
28.8	37.81 .76	22.7 1.8	54 34.9 18.0	20.9 1.9	40.96 .27	21.7 0.8	37.23 .28	16.3 0.3
Mar. 10.8	38.61 .83	21.2 1.2	54 53.5 19.0	19.2 1.5	41.23 .28	21.1 -0.4	37.52 .30	16.0 0.4
20.8	39.46 .87	20.4 -0.5	55 12.9 19.7	18.0 1.0	41.52 .29	20.8 0.0	37.83 .31	15.5 0.5
30.8	40.34 .88	20.2 +0.1	55 32.8 19.9	17.3 +0.5	41.82 .30	21.1 +0.4	38.14 .32	14.8 0.6
Apr. 9.7	41.22 +.86	20.6 +0.8	55 52.6+19.7	17.0 0.0	42.12 +.30	21.7 +0.8	38.46 +.32	14.1 +0.7
19.7	42.07 .82	21.8 1.4	56 12.1 19.1	17.2 -0.5	42.42 .30	22.7 1.2	38.79 .32	13.4 0.8
29.7	42.86 .75	23.5 2.0	56 30.8 18.2	17.9 1.0	42.71 .29	24.1 1.5	39.11 .32	12.5 0.9
May 9.7	43.57 .66	25.7 2.4	56 48.4 16.9	19.1 1.4	42.99 .27	25.8 1.8	39.42 .31	11.6 0.9
19.6	44.18 .55	28.4 2.8	57 4.5 15.2	20.7 1.8	43.26 .25	27.7 2.0	39.72 .29	10.8 0.9
29.6	44.66 +.42	31.4 +3.1	57 18.6+13.2	22.7 -2.2	43.50 +.23	29.8 +2.2	40.00 +.27	9.9 +0.8
June 8.6	45.01 .28	34.7 3.4	57 30.6 10.8	25.0 2.5	43.72 .20	32.1 2.3	40.25 .24	9.2 0.7
18.5	45.22 +.14	38.1 3.5	57 40.2 8.2	27.5 2.7	43.90 .16	34.4 2.3	40.47 .21	8.5 0.6
28.4	45.29 -0.01	41.6 3.5	57 47.1 5.5	30.3 2.8	44.05 .12	36.6 2.2	40.66 .17	7.9 0.5
July 8.4	45.20 .16	45.1 3.4	57 51.1+ 2.6	33.2 2.9	44.15 .08	38.8 2.1	40.80 .12	7.5 0.4
18.4	44.97 -0.30	48.5 +3.3	57 52.2- 0.5	36.2 -3.0	44.21 +0.4	40.9 +2.0	40.90 +0.8	7.2 +0.2
28.4	44.60 .44	51.8 3.1	57 50.2 3.5	39.1 2.9	44.23 .00	42.8 1.8	40.96 +0.3	7.0 +0.1
Aug. 7.3	44.10 .56	54.7 2.8	57 45.3 6.4	41.9 2.7	44.21 -0.4	44.5 1.6	40.96 -0.01	6.9 0.0
17.3	43.47 .67	57.4 2.5	57 37.6 9.0	44.4 2.4	44.15 .08	46.0 1.3	40.92 .06	6.9 -0.1
27.3	42.74 .77	59.7 2.1	57 27.3 11.4	46.7 2.0	44.04 .12	47.3 1.1	40.84 .10	7.0 0.1
Sept. 6.2	41.93 -.85	61.6 +1.6	57 14.9-13.4	48.5 -1.6	43.91 -1.4	48.2 +0.8	40.73 -1.3	7.1 -0.2
16.2	41.05 .90	63.0 1.2	57 0.7 14.8	49.8 1.1	43.75 .16	48.9 0.5	40.59 .13	7.3 0.2
26.2	40.12 .94	63.9 0.7	56 45.4 15.8	50.6 -0.5	43.58 .18	49.4 +0.2	40.43 .17	7.4 0.2
Oct. 6.2	39.17 .95	64.3 +0.1	56 29.4 16.1	50.8 +0.1	43.40 .18	49.5 0.0	40.26 .17	7.6 0.1
16.1	38.22 .93	64.2 -0.4	56 13.4 15.7	50.4 0.7	43.22 .17	49.3 -0.3	40.09 .16	7.7 0.1
26.1	37.31 -.89	63.5 -0.9	55 58.0-14.7	49.4 +1.3	43.06 -.15	48.8 -0.6	39.93 -1.5	7.8 -0.1
Nov. 5.1	36.44 .83	62.3 1.4	55 44.0 13.1	47.8 1.9	42.92 .13	48.1 0.9	39.79 .12	7.9 -0.1
15.1	35.65 .74	60.6 1.9	55 31.9 10.9	45.6 2.4	42.80 .10	47.0 1.2	39.69 .09	7.9 0.0
25.1	34.96 .63	58.4 2.4	55 22.3 8.3	43.0 2.8	42.72 .06	45.7 1.4	39.62 .05	7.9 0.0
Dec. 5.1	34.40 .50	55.8 2.8	55 15.4 5.3	40.0 3.1	42.68 -.02	44.1 1.6	39.59 -0.01	8.0 0.0
15.1	33.97 -.35	52.8 -3.1	55 11.7- 2.1	36.7 +3.4	42.68 +0.2	42.4 -1.8	39.60 +0.4	8.0 0.0
25.0	33.70 .19	49.5 3.3	55 11.2+ 1.2	33.2 3.5	42.72 .06	40.5 1.9	39.66 .08	8.0 0.0
35.0	33.60 -.04	46.1 -3.4	55 14.0+ 4.5	29.7 +3.6	42.80 +0.9	38.6 -2.0	39.76 +1.2	8.0 0.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Draconis.		γ Draconis.		δ Aquilæ.		κ Aquilæ.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	h m 19 12	° ' " +67 28	h m 19 17	° ' " +73 9	h m 19 20	° ' " +2 54	h m 19 31	° ' " -7 15
Jan. 0.0	28.12 -07	47.0 -3.4	26.84 -14	49.8 -3.3	17.68 +08	28.4 -1.3	20.47 +08	28.8 -0.7
10.0	28.11 +04	43.5 3.4	26.76 .00	46.4 3.4	17.78 .12	27.0 1.3	20.57 .12	29.5 0.7
20.0	28.20 .15	40.1 3.4	26.83 +14	42.9 3.4	17.92 .16	25.7 1.3	20.70 .15	30.2 0.6
29.9	28.40 .25	36.8 3.2	27.04 .28	39.6 3.2	18.09 .19	24.5 1.2	20.87 .18	30.8 0.5
Feb. 8.9	28.70 .35	33.7 2.9	27.39 .41	36.5 2.9	18.29 .22	23.5 1.0	21.07 .21	31.3 0.4
18.9	29.09 +43	31.0 -2.5	27.86 +32	33.7 -2.5	18.52 +24	22.6 -0.7	21.29 +23	31.6 -0.2
28.9	29.56 .30	28.7 2.0	28.43 .62	31.4 2.0	18.76 .26	22.0 0.5	21.53 .25	31.8 0.0
Mar. 10.8	30.09 .55	27.0 1.4	29.10 .70	29.7 1.5	19.03 .27	21.7 -0.2	21.80 .27	31.7 +0.2
20.8	30.66 .59	26.0 0.8	29.83 .75	28.5 0.9	19.31 .28	21.7 +0.2	22.08 .29	31.4 0.4
30.8	31.26 .61	25.6 -0.1	30.59 .77	28.0 -0.2	19.60 .29	22.1 0.5	22.37 .30	30.9 0.6
Apr. 9.8	31.88 +61	25.8 +0.6	31.38 +78	28.1 +0.5	19.90 +30	22.7 +0.8	22.68 +30	30.1 +0.9
19.7	32.48 .59	26.7 1.2	32.15 .75	28.9 1.1	20.20 .30	23.7 1.1	22.98 .31	29.2 1.1
29.7	33.06 .56	28.2 1.8	32.89 .71	30.3 1.7	20.49 .30	24.9 1.4	23.29 .30	28.0 1.2
May 9.7	33.60 .51	30.2 2.3	33.57 .64	32.3 2.2	20.79 .29	26.4 1.6	23.59 .30	26.7 1.3
19.6	34.07 .44	32.8 2.7	34.18 .56	34.7 2.6	21.07 .27	28.0 1.7	23.88 .28	25.4 1.4
29.6	34.48 +37	35.7 +3.1	34.70 +46	37.6 +3.0	21.33 +25	29.8 +1.8	24.16 +26	24.0 +1.4
June 8.6	34.81 .28	39.0 3.3	35.10 .35	40.7 3.3	21.56 .22	31.6 1.8	24.41 .24	22.5 1.4
18.6	35.05 .19	42.4 3.5	35.39 .22	44.2 3.5	21.77 .19	33.5 1.8	24.63 .21	21.2 1.3
28.5	35.19 +09	46.0 3.6	35.55 +09	47.7 3.6	21.94 .16	35.3 1.7	24.82 .17	19.9 1.2
July 8.5	35.23 .00	49.6 3.6	35.58 -03	51.3 3.6	22.08 .12	37.0 1.6	24.97 .13	18.7 1.1
18.5	35.18 -10	53.1 +3.5	35.48 -16	54.8 +3.5	22.17 +07	38.6 +1.5	25.08 +09	17.6 +1.0
28.5	35.03 .20	56.5 3.3	35.26 .28	58.3 3.3	22.22 +03	40.0 1.4	25.15 +04	16.7 0.8
Aug. 7.4	34.78 .29	59.7 3.0	34.91 .40	61.5 3.1	22.22 -01	41.3 1.2	25.17 .00	15.9 0.7
17.4	34.44 .37	62.6 2.7	34.45 .51	64.4 2.8	22.28 .06	42.4 1.0	25.14 -04	15.3 0.5
27.4	34.03 .44	65.1 2.4	33.89 .60	67.1 2.4	22.11 .09	43.3 0.8	25.08 .08	14.9 0.4
Sept. 6.3	33.56 -50	67.3 +2.0	33.24 -68	69.3 +2.0	22.00 -12	44.0 +0.6	24.98 -11	14.6 +0.2
16.3	33.03 .55	69.0 1.5	32.53 .74	71.2 1.6	21.86 .15	44.5 0.4	24.85 .14	14.4 +0.1
26.3	32.46 .58	70.3 1.0	31.76 .79	72.5 1.1	21.71 .16	44.8 +0.2	24.70 .15	14.4 .00
Oct. 6.3	31.86 .59	71.0 +0.5	30.95 .81	73.3 +0.6	21.54 .16	44.8 0.0	24.54 .16	14.4 -0.1
16.2	31.27 .59	71.2 -0.1	30.14 .81	73.7 0.0	21.38 .16	44.7 -0.2	24.38 .16	14.5 0.2
26.2	30.68 -57	70.8 -0.7	29.33 -79	73.5 -0.5	21.22 -15	44.4 -0.4	24.23 -15	14.7 -0.3
Nov. 5.2	30.12 .53	69.9 1.2	28.56 .74	72.6 1.1	21.08 .12	43.9 0.6	24.09 .13	15.1 0.4
15.2	29.62 .48	68.4 1.7	27.85 .68	71.3 1.6	20.97 .09	43.2 0.8	23.98 .10	15.5 0.4
25.1	29.17 .41	66.5 2.2	27.21 .59	69.5 2.1	20.89 .06	42.4 1.0	23.89 .06	16.0 0.5
Dec. 5.1	28.80 .33	64.0 2.6	26.67 .49	67.1 2.5	20.85 -02	41.3 1.1	23.85 -02	16.5 0.6
15.1	28.52 -23	61.2 -3.0	26.24 -36	64.4 -2.9	20.84 +02	40.2 -1.2	23.84 +02	17.2 -0.6
25.0	28.33 .13	58.1 3.2	25.94 .23	61.3 3.2	20.88 .06	38.9 1.3	23.87 .06	17.8 0.7
35.0	28.26 -03	54.7 -3.4	25.77 -11	58.0 -3.4	20.95 +10	37.6 -1.3	23.95 +09	18.5 -0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Aquilæ.		ϵ Aquilæ. (Altaïr.)		ϵ Draconis.		β Aquilæ.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 19 41	° ' " +10 21	h m 19 45	° ' " + 8 35	h m 19 48	° ' " +69 59	h m 19 50	° ' " + 6 8
Jan. 0.0	21.10 +.06	40.0 -1.7	44.83 +.05	42.4 -1.6	26.83 -1.19	82.0 -3.2	14.62 +.05	53.7 -2.4
10.0	21.17 .09	38.3 1.7	44.90 .09	40.8 1.6	26.70 -.06	78.8 3.3	14.69 .09	52.4 1.4
20.0	21.28 .13	36.6 1.6	45.01 .13	39.2 1.5	26.70 +.05	75.4 3.4	14.79 .12	50.9 1.4
30.0	21.43 .16	35.0 1.5	45.16 .16	37.8 1.4	26.81 .17	72.0 3.3	14.93 .15	49.6 1.3
Feb. 8.9	21.60 .19	33.6 1.3	45.33 .19	36.5 1.2	27.04 .29	68.8 3.1	15.10 .18	48.4 1.1
18.9	21.81 +.22	32.4 -1.1	45.53 +.22	35.4 -1.0	27.38 +.39	65.9 -2.8	15.30 +.21	47.4 -0.9
28.9	22.04 .24	31.5 0.7	45.76 .24	34.6 0.6	27.82 .48	63.3 2.3	15.52 .23	46.6 0.6
Mar. 10.9	22.29 .26	31.0 -0.4	46.01 .26	34.1 -0.3	28.34 .56	61.3 1.8	15.77 .25	46.2 -0.3
20.8	22.56 .28	30.8 0.0	46.28 .28	34.0 0.0	28.94 .62	59.8 1.2	16.03 .27	46.2 +0.1
30.8	22.84 .29	31.0 +0.4	46.56 .29	34.2 +0.4	29.58 .66	58.9 -0.6	16.31 .29	46.5 0.4
Apr. 9.8	23.14 +.30	31.6 +0.8	46.86 +.30	34.8 +0.8	30.25 +.67	58.7 +0.1	16.61 +.30	47.1 +0.8
19.7	23.44 .30	32.5 1.1	47.16 .30	35.8 1.1	30.93 .67	59.1 0.7	16.91 .30	48.0 1.1
29.7	23.74 .30	33.8 1.4	47.46 .30	37.1 1.4	31.60 .65	60.2 1.3	17.21 .30	49.3 1.4
May 9.7	24.04 .29	35.4 1.7	47.76 .29	38.7 1.7	32.23 .61	61.8 1.9	17.51 .30	50.8 1.6
19.7	24.33 .28	37.3 1.9	48.05 .28	40.5 1.9	32.82 .55	64.0 2.4	17.80 .29	52.6 1.8
29.6	24.60 +.26	39.3 +2.1	48.33 +.26	42.5 +2.0	33.33 +.48	66.6 +2.8	18.08 +.27	54.5 +1.9
June 8.6	24.85 .23	41.5 2.2	48.58 .24	44.6 2.1	33.77 .39	69.6 3.2	18.34 .24	56.5 2.0
18.6	25.07 .20	43.7 2.2	48.80 .21	46.8 2.1	34.12 .29	72.9 3.4	18.56 .21	58.5 2.0
28.6	25.25 .17	45.9 2.2	48.99 .17	48.9 2.1	34.36 .19	76.5 3.6	18.76 .18	60.5 2.0
July 8.5	25.40 .13	48.0 2.1	49.15 .13	51.0 2.0	34.49 +.08	80.1 3.6	18.92 .14	62.5 1.9
18.5	25.50 +.08	50.1 +2.0	49.26 +.09	53.0 +1.9	34.52 -.03	83.8 +3.6	19.03 +.10	64.3 +1.8
28.5	25.56 +.04	52.0 1.8	49.32 +.04	54.8 1.7	34.43 .14	87.4 3.5	19.10 .05	66.0 1.6
Aug. 7.4	25.58 .00	53.7 1.6	49.35 .00	56.4 1.5	34.24 .24	90.8 3.3	19.13 +.01	67.5 1.4
17.4	25.55 -.05	55.2 1.4	49.33 -.04	57.9 1.3	33.94 .34	94.0 3.1	19.12 -.04	68.8 1.2
27.4	25.48 .09	56.5 1.2	49.27 .08	59.1 1.1	33.56 .43	97.0 2.8	19.06 .07	69.9 1.0
Sept. 6.4	25.38 -.12	57.5 +0.9	49.17 -.11	60.1 +0.9	33.08 -.51	99.6 +2.4	18.97 -.10	70.8 +0.8
16.3	25.25 .14	58.3 0.6	49.04 .14	60.9 0.6	32.54 .57	101.8 2.0	18.84 .13	71.5 0.6
26.3	25.10 .16	58.8 0.4	48.90 .16	61.4 0.4	31.94 .62	103.6 1.5	18.70 .15	71.9 0.3
Oct. 6.3	24.93 .17	59.1 +0.1	48.73 .17	61.6 +0.1	31.30 .65	104.9 1.0	18.54 .16	72.1 +0.1
16.3	24.76 .17	59.1 -0.1	48.56 .16	61.6 -0.1	30.64 .66	105.7 +0.5	18.38 .16	72.1 -0.2
26.2	24.60 -.16	58.8 -0.4	48.41 -.15	61.4 -0.4	29.98 -.66	105.9 -0.1	18.22 -.15	71.8 -0.4
Nov. 5.2	24.45 .14	58.3 0.7	48.26 .14	60.9 0.6	29.33 .63	105.6 0.6	18.07 .14	71.4 0.6
15.2	24.32 .11	57.5 0.9	48.13 .11	60.2 0.8	28.72 .59	104.7 1.2	17.94 .11	70.7 0.8
25.2	24.22 .08	56.5 1.1	48.03 .08	59.3 1.0	28.16 .52	103.2 1.7	17.84 .08	69.8 1.0
Dec. 5.1	24.16 .05	55.3 1.3	47.97 .05	58.2 1.2	27.67 .45	101.2 2.2	17.78 .05	68.7 1.2
15.1	24.13 -.01	53.9 -1.5	47.94 -.01	56.8 -1.4	27.27 -.35	98.8 -2.6	17.75 -.01	67.5 -1.3
25.1	24.14 +.03	52.3 1.6	47.95 +.03	55.4 1.5	26.97 .25	95.9 3.0	17.76 +.03	66.2 1.4
35.0	24.19 +.07	50.7 -1.7	48.00 +.07	53.9 -1.6	26.77 -.15	92.8 -3.2	17.80 +.06	64.8 -1.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♈ Aquilæ.		♄ Cephei.		♐ Capricorni.		♏ Pavonis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination South.
	h m 19 59	° ' " + 6 59	h m 20 12	° ' " +77 23	h m 20 12	° ' " -12 51	h m 20 17	° ' " -57 3
Jan. 0.1	5.95 +.04	10.3 -1.4	14.25 - .45	69.4 -2.9	19.98 +.05	56.5 -0.3	29.69 +.02	63.8 +2.2
10.0	6.02 .08	8.8 1.4	13.88 .27	66.2 3.2	20.04 .08	56.7 0.2	29.75 .09	61.5 2.4
20.0	6.11 .12	7.4 1.4	13.71 - .08	63.1 3.2	20.14 .12	56.9 0.2	29.88 .16	59.0 2.5
30.0	6.24 .16	6.1 1.3	13.72 + .11	59.8 3.2	20.27 .15	57.0 -0.1	30.07 .22	56.6 2.5
Feb. 9.0	6.40 .18	4.8 1.1	13.92 .30	56.5 3.2	20.43 .18	57.0 0.0	30.32 .28	54.0 2.5
18.9	6.59 +.21	3.8 -0.9	14.31 + .47	53.4 -2.9	20.62 +.21	56.9 +0.2	30.64 +.33	51.6 +2.4
28.9	6.81 .23	3.1 0.6	14.87 .63	50.7 2.5	20.84 .23	56.7 0.4	30.99 .38	49.3 2.3
Mar. 10.9	7.05 .25	2.7 -0.3	15.57 .77	48.4 2.1	21.09 .25	56.2 0.5	31.39 .42	47.0 2.1
20.8	7.31 .27	2.6 +0.1	16.41 .88	46.6 1.5	21.35 .27	55.6 0.7	31.83 .46	45.0 1.9
30.8	7.58 .29	2.9 0.5	17.34 .96	45.3 0.9	21.63 .29	54.8 0.9	32.31 .48	43.2 1.7
Apr. 9.8	7.88 +.30	3.5 +0.8	18.33 +1.00	44.7 -0.3	21.93 +.30	53.8 +1.1	32.80 +.50	41.6 +1.4
19.8	8.18 .30	4.5 1.1	19.35 1.01	44.7 +0.3	22.24 .31	52.6 1.2	33.32 .52	40.3 1.1
29.7	8.48 .30	5.7 1.4	20.36 .99	45.4 1.0	22.55 .32	51.4 1.3	33.84 .53	39.4 0.8
May 9.7	8.78 .30	7.3 1.7	21.34 .94	46.7 1.6	22.87 .32	50.0 1.4	34.37 .52	38.7 0.5
19.7	9.08 .29	9.1 1.9	22.25 .86	48.5 2.1	23.18 .31	48.6 1.4	34.89 .51	38.4 +0.1
29.7	9.36 +.27	11.0 +2.0	23.07 + .76	50.8 +2.5	23.49 +.29	47.2 +1.4	35.38 +.48	38.4 -0.2
June 8.6	9.62 .25	13.1 2.1	23.76 .63	53.6 2.9	23.77 .27	45.9 1.3	35.85 .44	38.8 0.6
18.6	9.86 .23	15.2 2.1	24.33 .49	56.7 3.2	24.03 .24	44.6 1.2	36.27 .40	39.5 0.9
28.6	10.06 .18	17.2 2.0	24.74 .33	60.1 3.4	24.26 .21	43.4 1.1	36.64 .34	40.5 1.2
July 8.5	10.22 .14	19.3 1.9	24.98 +.16	63.6 3.6	24.45 .17	42.4 0.9	36.95 .28	41.9 1.5
18.5	10.35 +.10	21.2 +1.8	25.06 - .01	67.3 +3.6	24.60 +.13	41.6 +0.8	37.20 +.20	43.5 -1.7
28.5	10.43 .06	23.0 1.7	24.98 .17	70.9 3.6	24.71 .08	40.9 0.6	37.36 .12	45.2 1.8
Aug. 7.5	10.46 +.01	24.6 1.5	24.72 .34	74.5 3.5	24.77 +.04	40.4 0.4	37.44 +.05	47.1 1.9
17.4	10.45 - .03	26.0 1.3	24.30 .49	77.9 3.3	24.78 - .01	40.0 0.3	37.45 - .03	49.1 1.9
27.4	10.40 .07	27.1 1.1	23.74 .63	81.1 3.1	24.75 .05	39.8 +0.1	37.38 .10	51.0 1.9
Sept. 6.4	10.32 - .10	28.1 +0.9	23.04 - .76	84.0 +2.8	24.68 - .09	39.7 0.0	37.24 - .17	52.8 -1.7
16.4	10.20 .13	28.8 0.6	22.23 .86	86.6 2.4	24.58 .12	39.8 -0.1	37.04 .23	54.4 1.5
26.3	10.06 .15	29.3 0.4	21.31 .95	88.8 1.9	24.45 .14	39.9 0.2	36.78 .27	55.8 1.2
Oct. 6.3	9.90 .16	29.6 +0.1	20.32 1.02	90.5 1.5	24.30 .15	40.1 0.2	36.49 .30	56.9 0.9
16.3	9.74 .16	29.6 -0.1	19.28 1.05	91.7 1.0	24.14 .16	40.4 0.3	36.17 .32	57.6 0.5
26.2	9.58 - .15	29.4 -0.3	18.22 -1.06	92.4 +0.4	23.99 - .15	40.6 -0.3	35.86 - .31	57.9 -0.1
Nov. 5.2	9.43 .14	29.0 0.6	17.16 1.05	92.6 -0.2	23.84 .14	40.9 0.3	35.55 .29	57.8 +0.4
15.2	9.30 .12	28.3 0.8	16.12 1.00	92.1 0.7	23.72 .12	41.2 0.3	35.27 .26	57.2 0.8
25.2	9.20 .09	27.5 1.0	15.15 .94	91.1 1.3	23.61 .09	41.6 0.3	35.03 .21	56.2 1.2
Dec. 5.1	9.12 .06	26.4 1.1	14.27 .83	89.5 1.8	23.54 .05	41.9 0.3	34.85 .15	54.8 1.5
15.1	9.09 - .02	25.2 -1.3	13.50 - .70	87.5 -2.3	23.50 - .02	42.2 -0.3	34.72 - .09	53.1 +1.8
25.1	9.09 +.02	23.9 1.4	12.88 .55	85.0 2.7	23.50 +.02	42.5 0.3	34.67 - .03	51.1 2.1
35.1	9.12 +.05	22.5 -1.4	12.41 - .40	82.1 -3.1	23.54 +.06	42.8 -0.3	34.68 +.04	48.9 +2.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Cygni.		π Capricorni.		ϵ Delphini.		Groombridge 3241.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h ^m 20 18	[°] ['] +39 55	^h ^m 20 21	[°] ['] -18 32	^h ^m 20 28	[°] ['] +10 57	^h ^m 20 30	[°] ['] +72 10
Jan. 0.1	30.72 -03	38.7 -2.6	25.20 +04	64.3 +0.1	16.97 +0.1	10.0 -1.5	22.33 -33	64.5 -2.8
10.0	30.72 +01	36.0 2.8	25.26 .08	64.2 0.1	17.00 .05	8.5 1.5	22.06 .21	61.5 3.1
20.0	30.76 .06	33.2 2.8	25.35 .11	64.0 0.2	17.07 .08	6.9 1.5	21.92 -.08	58.3 3.3
30.0	30.84 .11	30.3 2.8	25.48 .15	63.8 0.3	17.16 .12	5.4 1.4	21.90 +05	55.0 3.1
Feb. 9.0	30.97 .16	27.6 2.6	25.64 .18	63.4 0.4	17.30 .15	4.1 1.3	22.02 .19	51.7 3.2
18.9	31.15 +20	25.2 -2.3	25.82 +21	62.9 +0.5	17.46 +18	2.9 -1.1	22.27 +31	48.6 -3.0
28.9	31.37 .24	23.0 1.9	26.04 .23	62.3 0.7	17.65 .21	2.0 0.8	22.65 .43	45.7 2.6
Mar. 10.9	31.62 .27	21.4 1.4	26.29 .26	61.5 0.8	17.87 .23	1.4 0.4	23.13 .53	43.3 2.2
20.9	31.91 .30	20.2 0.9	26.55 .28	60.7 1.0	18.11 .26	1.1 -0.1	23.71 .62	41.3 1.7
30.8	32.23 .33	19.5 -0.4	26.84 .30	59.6 1.1	18.37 .28	1.3 +0.3	24.37 .68	39.9 1.1
Apr. 9.8	32.56 +34	19.4 +0.2	27.14 +31	58.5 +1.2	18.66 +29	1.8 +0.7	25.08 +73	39.2 -0.5
19.8	32.91 .35	19.9 0.8	27.46 .32	57.3 1.3	18.95 .30	2.7 1.1	25.83 .75	39.0 +0.2
29.7	33.27 .36	21.0 1.3	27.78 .33	56.0 1.3	19.26 .31	3.9 1.4	26.58 .75	39.5 0.8
May 9.7	33.62 .35	22.6 1.8	28.10 .33	54.6 1.3	19.57 .31	5.5 1.7	27.33 .72	40.6 1.4
19.7	33.97 .34	24.6 2.2	28.43 .32	53.3 1.3	19.87 .30	7.3 1.9	28.03 .68	42.4 2.0
29.7	34.29 +31	27.0 +2.6	28.74 +31	52.1 +1.2	20.17 +29	9.4 +2.1	28.68 +61	44.6 +2.5
June 8.6	34.59 .28	29.8 2.9	29.04 .29	50.9 1.1	20.44 .27	11.5 2.2	29.25 .53	47.3 2.9
18.6	34.86 .24	32.8 3.1	29.31 .26	49.8 1.0	20.70 .24	13.8 2.3	29.74 .43	50.3 3.2
28.6	35.08 .20	36.0 3.2	29.56 .23	48.9 0.8	20.92 .21	16.1 2.3	30.11 .32	53.7 3.4
July 8.6	35.25 .15	39.3 3.3	29.76 .19	48.2 0.6	21.11 .17	18.4 2.2	30.38 .21	57.2 3.6
18.5	35.38 +10	42.6 +3.3	29.93 +14	47.6 +0.5	21.26 +13	20.6 +2.1	30.53 +09	60.9 +3.7
28.5	35.45 +04	45.8 3.2	30.05 .10	47.2 0.3	21.37 .08	22.0 2.0	30.56 -03	64.6 3.7
Aug. 7.5	35.47 -01	48.9 3.0	30.12 +05	47.0 +0.1	21.43 +04	24.5 1.8	30.46 .15	68.2 3.6
17.4	35.43 .06	51.8 2.8	30.14 .00	47.0 0.0	21.44 -01	26.2 1.6	30.25 .26	71.8 3.4
27.4	35.35 .11	54.5 2.5	30.12 -04	47.1 -0.2	21.41 .05	27.7 1.4	29.93 .37	75.2 3.2
Sept. 6.4	35.22 -.15	56.8 +2.2	30.06 -.08	47.3 -0.3	21.35 -.08	28.9 +1.1	29.51 -.47	78.2 +2.9
16.4	35.05 .18	58.8 1.8	29.96 .11	47.6 0.3	21.25 .11	29.9 0.8	28.99 .56	81.0 2.6
26.3	34.84 .21	60.4 1.4	29.83 .14	47.9 0.3	21.12 .14	30.6 0.6	28.40 .62	83.3 2.1
Oct. 6.3	34.62 .23	61.6 0.9	29.68 .15	48.3 0.3	20.97 .15	31.1 0.3	27.74 .68	85.2 1.7
16.3	34.39 .24	62.3 +0.5	29.52 .16	48.7 0.4	20.81 .16	31.3 +0.1	27.05 .71	86.7 1.2
26.2	34.15 -.23	62.5 0.0	29.36 -.16	49.0 -0.3	20.65 -.16	31.2 -0.2	26.33 -.72	87.6 +0.6
Nov. 5.2	33.92 .22	62.3 -0.5	29.21 .15	49.3 0.3	20.50 .15	30.9 0.5	25.61 .72	87.9 +0.1
15.2	33.70 .20	61.6 0.9	29.08 .12	49.6 0.2	20.36 .13	30.3 0.7	24.90 .69	87.7 -0.5
25.2	33.50 .18	60.4 1.4	28.97 .09	49.7 0.2	20.24 .11	29.5 0.9	24.23 .65	86.9 1.1
Dec. 5.1	33.34 .14	58.8 1.8	28.89 .06	49.9 -0.1	20.15 .08	28.4 1.1	23.61 .58	85.5 1.7
15.1	33.22 -.10	56.8 -2.2	28.84 -.03	49.9 0.0	20.09 -.05	27.2 -1.3	23.07 -.50	83.5 -2.2
25.1	33.14 .06	54.5 2.5	28.84 +0.1	49.9 0.0	20.06 -0.1	25.8 1.4	22.62 .40	81.2 2.6
35.1	33.10 -.02	51.9 -2.7	28.87 +0.5	49.9 +0.1	20.07 +0.2	24.3 -1.5	22.28 -.30	78.4 -2.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Cygni.		μ Aquarii.		12 Year Cat. 1879.		ν Cygni.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 20 37	° ' +44 54	h m 20 47	° ' - 9 21	h m 20 52	° ' +80 9	h m 20 53	° ' +40 45
Jan. 0.1	53.81-.07	48.0-2.6	5.59+.01	76.2-0.4	6.81-.78	67.0-2.5	18.77-.07	79.0-2.4
10.1	53.77-.02	45.3 2.8	5.62 .05	76.6 0.4	6.13 .57	64.3 2.9	18.72-.02	76.4 2.6
20.0	53.77+.03	42.4 2.9	5.68 .08	77.0 0.3	5.67 .34	61.3 3.1	18.72+.02	73.7 2.7
30.0	53.83 .08	39.5 2.9	5.77 .11	77.2 0.2	5.44-.10	58.1 3.2	18.76 .07	71.0 2.7
Feb. 9.0	53.93 .13	36.7 2.7	5.89 .14	77.4-0.1	5.46+.14	54.8 3.2	18.85 .11	68.3 2.6
19.0	54.09+.18	34.0-2.5	6.05+.17	77.3+0.1	5.73+.38	51.6-3.1	18.99+.16	65.7-2.4
28.9	54.29 .23	31.7 2.2	6.23 .20	77.1 0.3	6.22 .61	48.6 2.8	19.17 .20	63.5 2.1
Mar. 10.9	54.54 .27	29.7 1.7	6.44 .22	76.7 0.5	6.94 .81	46.0 2.4	19.39 .24	61.6 1.7
20.9	54.83 .30	28.2 1.2	6.68 .25	76.1 0.7	7.85 .99	43.8 2.0	19.65 .28	60.2 1.2
30.8	55.15 .33	27.3-0.6	6.94 .27	75.2 0.9	8.91 1.12	42.1 1.4	19.95 .31	59.2 0.6
Apr. 9.8	55.50+.36	27.0 0.0	7.22+.29	74.2+1.1	10.08+1.22	40.9-0.8	20.27+.33	58.9-0.1
19.8	55.87 .37	27.2+0.5	7.51 .30	73.0 1.3	11.34 1.28	40.4-0.2	20.62 .35	59.1+0.5
29.8	56.25 .38	28.0 1.1	7.82 .31	71.6 1.5	12.63 1.29	40.5+0.4	20.97 .36	59.8 1.0
May 9.7	56.63 .38	29.4 1.6	8.14 .32	70.1 1.6	13.91 1.26	41.2 1.0	21.34 .36	61.1 1.5
19.7	57.00 .36	31.3 2.1	8.45 .31	68.4 1.6	15.13 1.19	42.5 1.6	21.70 .36	62.9 2.0
29.7	57.35+.34	33.6+2.5	8.76+.30	66.8+1.6	16.27+1.08	44.4+2.1	22.05+.34	65.1+2.4
June 8.6	57.68 .31	36.3 2.9	9.06 .29	65.2 1.6	17.29 .95	46.7 2.6	22.38 .31	67.7 2.7
18.6	57.98 .27	39.4 3.1	9.34 .27	63.6 1.5	18.16 .78	49.5 3.0	22.68 .28	70.6 3.0
28.6	58.23 .23	42.6 3.3	9.59 .24	62.2 1.4	18.85 .60	52.7 3.3	22.94 .24	73.7 3.2
July 8.6	58.43 .18	46.0 3.4	9.81 .20	60.8 1.2	19.36 .40	56.0 3.5	23.16 .19	77.0 3.3
18.5	58.58+.12	49.4+3.4	9.99+.16	59.7+1.1	19.66+.20	59.6+3.6	23.32+.14	80.3+3.3
28.5	58.67 .06	52.8 3.3	10.12 .11	58.7 0.9	19.75-.01	63.3 3.7	23.44 .09	83.6 3.3
Aug. 7.5	58.70+.01	56.1 3.2	10.21 .07	57.9 0.7	19.63 .22	67.0 3.7	23.50+.03	86.8 3.2
17.5	58.68-.05	59.2 3.0	10.26+.02	57.3 0.5	19.31 .42	70.6 3.6	23.51-.02	89.9 3.0
27.4	58.61 .10	62.2 2.8	10.26-.02	56.9 0.3	18.79 .62	74.2 3.4	23.46 .07	92.8 2.7
Sept. 6.4	58.48-.15	64.8+2.5	10.22-.06	56.6+0.2	18.09-.79	77.5+3.2	23.37-.12	95.4+2.4
16.4	58.31 .19	67.1 2.1	10.14 .09	56.5-0.1	17.22 .95	80.5 2.9	23.23 .16	97.7 2.1
26.3	58.10 .22	69.0 1.7	10.03 .12	56.6 0.2	16.20 1.08	83.2 2.5	23.06 .19	99.6 1.7
Oct. 6.3	57.87 .24	70.5 1.2	9.90 .14	56.7 0.3	15.06 1.19	85.5 2.1	22.86 .21	101.1 1.3
16.3	57.62 .25	71.5 0.8	9.76 .15	57.0 0.3	13.82 1.27	87.4 1.6	22.64 .22	102.2 0.9
26.3	57.36-.26	72.0+0.3	9.61-.15	57.3-0.4	12.52-1.32	88.7+1.1	22.41-.23	102.8+0.4
Nov. 5.2	57.10 .25	72.1-0.2	9.46 .14	57.7 0.4	11.18 1.34	89.5+0.5	22.18 .23	103.0-0.1
15.2	56.86 .23	71.6 0.7	9.33 .12	58.1 0.4	9.84 1.32	89.7 0.0	21.96 .21	102.7 0.6
25.2	56.63 .21	70.7 1.2	9.22 .10	58.5 0.5	8.54 1.27	89.4-0.6	21.76 .19	101.9 1.0
Dec. 5.2	56.44 .18	69.2 1.7	9.13 .07	59.0 0.5	7.30 1.18	88.4 1.2	21.57 .17	100.6 1.5
15.1	56.27-.14	67.4-2.1	9.07-.04	59.4-0.5	6.18-1.05	86.9-1.8	21.42-.13	98.9-1.9
25.1	56.15 .10	65.1 2.4	9.04-.01	59.9 0.4	5.21 .89	84.9 2.3	21.31 .09	96.9 2.2
35.1	56.08-.05	62.5-2.7	9.04+.02	60.3-0.4	4.41-.70	82.4-2.6	21.23-.06	94.5-2.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	61 Cygni.		ζ Cygni.		α Cephei.		ι Pegasi.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 21 2	° ' " +38 14	h m 21 8	° ' " +29 48	h m 21 16	° ' " +62 8	h m 21 17	° ' " +19 21
Jan. 0.1	15.67 -06	39.2 -2.2	32.29 -05	19.6 -2.0	4.80 -24	66.9 -2.4	18.78 -04	51.9 -1.6
10.1	15.63 -02	36.9 2.4	32.25 -01	17.5 2.2	4.60 .17	64.3 2.8	18.76 -01	50.2 1.7
20.0	15.63 +03	34.4 2.5	32.26 +02	15.2 2.3	4.47 .09	61.4 3.0	18.77 +03	48.4 1.8
30.0	15.68 .07	31.8 2.5	32.30 .06	12.9 2.3	4.41 -01	58.3 3.1	18.81 .06	46.6 1.8
Feb. 9.0	15.77 .11	29.3 2.4	32.38 .10	10.7 2.2	4.44 +07	55.1 3.1	18.89 .10	44.9 1.7
19.0	15.90 +13	27.0 -2.2	32.49 +14	8.6 -2.0	4.55 +13	52.0 -3.0	19.00 +13	43.3 -1.3
28.9	16.08 .20	24.9 1.9	32.65 .18	6.8 1.7	4.74 .23	49.1 2.8	19.14 .16	42.0 1.8
Mar. 10.9	16.30 .24	23.2 1.5	32.84 .21	5.3 1.3	5.01 .30	46.5 2.4	19.32 .19	41.0 0.9
20.9	16.55 .28	21.8 1.1	33.07 .24	4.2 0.9	5.35 .37	44.4 1.9	19.53 .22	40.3 0.5
30.9	16.84 .31	21.0 -0.6	33.33 .27	3.5 -0.4	5.75 .43	42.7 1.4	19.77 .25	40.0 -0.1
Apr. 9.8	17.16 +33	20.8 0.0	33.61 +30	3.4 +0.1	6.21 +48	41.6 -0.8	20.04 +28	40.2 +0.4
19.8	17.51 .35	21.0 +0.5	33.92 .32	3.7 0.6	6.71 .51	41.1 -0.2	20.33 .30	40.8 0.8
29.8	17.87 .36	21.8 1.1	34.25 .33	4.5 1.1	7.23 .53	41.2 +0.4	20.63 .31	41.8 1.2
May 9.7	18.23 .37	23.2 1.6	34.58 .33	5.8 1.5	7.76 .53	41.9 1.0	20.95 .32	43.2 1.6
19.7	18.60 .36	25.0 2.0	34.92 .33	7.6 1.9	8.29 .52	43.3 1.6	21.27 .32	44.9 1.9
29.7	18.96 +35	27.2 +2.4	35.24 +32	9.7 +2.3	8.80 +49	45.1 +2.1	21.59 +31	46.9 +2.2
June 8.7	19.29 .32	29.9 2.8	35.56 .30	12.1 2.6	9.28 .45	47.5 2.6	21.89 .30	49.2 2.4
18.6	19.60 .29	32.8 3.0	35.85 .28	14.8 2.8	9.71 .40	50.3 3.0	22.18 .28	51.7 2.5
28.6	19.88 .25	35.9 3.2	36.11 .24	17.7 2.9	10.09 .34	53.4 3.3	22.44 .25	54.3 2.6
July 8.6	20.11 .21	39.2 3.3	36.34 .20	20.6 3.0	10.40 .27	56.9 3.5	22.67 .21	56.9 2.6
18.6	20.30 +16	42.5 +3.3	36.52 +16	23.6 +3.1	10.63 +20	60.4 +3.6	22.86 +17	59.6 +2.6
28.5	20.44 .11	45.8 3.3	36.66 .11	26.6 2.9	10.79 .12	64.2 3.7	23.01 .13	62.1 2.5
Aug. 7.5	20.52 .06	49.1 3.2	36.74 .06	29.4 2.8	10.87 +04	67.9 3.7	23.12 .08	64.5 2.3
17.5	20.55 +01	52.2 3.0	36.78 +02	32.2 2.6	10.86 -04	71.5 3.6	23.18 +04	66.8 2.1
27.4	20.53 -04	55.1 2.2	36.78 -03	34.6 2.4	10.78 .12	75.0 3.4	23.19 -01	68.8 1.9
Sept. 6.4	20.47 -09	57.8 +2.5	36.72 -07	36.9 +2.1	10.62 -19	78.4 +3.2	23.16 -05	70.6 +1.7
16.4	20.36 .13	60.1 2.2	36.63 .11	38.9 1.8	10.39 .26	81.4 2.9	23.09 .08	72.1 1.4
26.4	20.21 .16	62.1 1.8	36.51 .14	40.5 1.5	10.11 .31	84.1 2.5	22.99 .11	73.4 1.1
Oct. 6.3	20.04 .18	63.7 1.4	36.35 .16	41.8 1.1	9.77 .36	86.4 2.1	22.86 .13	74.3 0.8
16.3	19.85 .20	64.9 1.0	36.18 .18	42.7 0.7	9.40 .39	88.3 1.6	22.72 .15	75.0 0.5
26.3	19.64 -20	65.7 +0.5	36.00 -18	43.2 +0.3	8.99 -41	89.7 +1.1	22.57 -16	75.3 +0.2
Nov. 5.3	19.44 .20	66.0 +0.1	35.82 .18	43.3 -0.1	8.58 .42	90.5 +0.5	22.41 .15	75.3 -0.2
15.2	19.24 .19	65.8 -0.4	35.64 .17	43.1 0.5	8.16 .41	90.8 0.0	22.26 .15	75.0 0.5
25.2	19.05 .17	65.2 0.8	35.48 .15	42.4 0.9	7.76 .39	90.5 -0.6	22.12 .13	74.4 0.7
Dec. 5.2	18.89 .15	64.1 1.3	35.33 .13	41.3 1.3	7.37 .37	89.6 1.2	22.00 .11	73.4 1.0
15.1	18.76 -12	62.6 -1.7	35.21 -10	39.9 -1.6	7.03 -32	88.2 -1.7	21.90 -09	72.2 -1.3
25.1	18.65 .08	60.8 2.0	35.12 .07	38.2 1.9	6.73 .27	86.2 2.2	21.82 .06	70.8 1.5
35.1	18.59 -05	58.6 -2.3	35.07 -04	36.1 -2.1	6.48 -22	83.8 -2.5	21.78 -03	69.2 -1.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Aquarii.			β Cephei.			ξ Aquarii.			ϵ Pegasi.		
	Right Ascension.		Declination South.	Right Ascension.		Declination North.	Right Ascension.		Declination South.	Right Ascension.		Declination North.
	h m 21 26	° ' " — 6 1	h m 21 27	° ' " +70 6	h m 21 32	° ' " — 8 18	h m 21 39	° ' " + 9 24				
Jan.	0.1	8.00 —.02	30.8 —0.5	16.17 —.39	42.6 —2.3	15.99 —.02	61.6 —0.4	7.33 —.04	11.0 —1.2			
	10.1	8.00 +.01	31.3 0.5	15.82 .30	40.1 2.7	15.98 .00	62.0 0.4	7.30 —.01	9.8 1.2			
	20.1	8.02 .04	31.7 0.4	15.57 .20	37.3 3.0	16.00 +.03	62.4 0.3	7.30 +.01	8.6 1.2			
	30.0	8.07 .07	32.1 0.3	15.42 —.09	34.2 3.2	16.04 .06	62.6 —0.2	7.33 .05	7.4 1.2			
Feb.	9.0	8.15 .10	32.4 —0.2	15.39 +.03	31.0 3.3	16.12 .09	62.7 0.0	7.39 .06	6.2 1.1			
	19.0	8.27 +.13	32.4 0.0	15.47 +.14	27.8 —3.1	16.23 +.12	62.6 +0.2	7.49 +.11	5.2 —0.9			
Mar.	28.9	8.41 .16	32.3 +0.2	15.67 .26	24.8 2.9	16.37 .15	62.3 0.4	7.61 .14	4.5 0.6			
	10.9	8.58 .19	32.0 0.4	15.99 .36	22.0 2.6	16.54 .18	61.9 0.6	7.77 .17	3.9 —0.3			
	20.9	8.79 .22	31.4 0.7	16.40 .46	19.6 2.2	16.74 .21	61.2 0.8	7.96 .20	3.7 0.0			
	30.9	9.02 .24	30.6 0.9	16.91 .54	17.6 1.7	16.96 .24	60.3 1.0	8.17 .23	3.8 +0.3			
Apr.	9.8	9.27 +.27	29.6 +1.2	17.49 +.61	16.3 —1.1	17.22 +.26	59.1 +1.2	8.42 +.26	4.3 +0.6			
	19.8	9.55 .29	28.3 1.4	18.13 .66	15.4 —0.5	17.49 .28	57.8 1.4	8.69 .28	5.1 1.0			
	29.8	9.85 .30	26.8 1.5	18.81 .69	15.3 +0.1	17.79 .30	56.3 1.6	8.98 .30	6.3 1.3			
May	9.8	10.16 .31	25.2 1.7	19.51 .70	15.7 0.8	18.10 .31	54.6 1.7	9.29 .31	7.7 1.6			
	19.7	10.47 .32	23.5 1.8	20.20 .68	16.8 1.4	18.41 .32	52.8 1.8	9.60 .32	9.5 1.8			
June	29.7	10.79 +.31	21.6 +1.8	20.87 +.65	18.4 +1.9	18.73 +.32	51.0 +1.8	9.92 +.31	11.4 +2.0			
	8.7	11.10 .30	19.8 1.8	21.50 .60	20.6 2.4	19.05 .31	49.2 1.8	10.23 .30	13.5 2.2			
	18.6	11.39 .28	18.0 1.8	22.07 .53	23.2 2.8	19.35 .29	47.5 1.7	10.52 .28	15.8 2.3			
	28.6	11.66 .26	16.3 1.7	22.56 .45	26.2 3.2	19.62 .26	45.8 1.6	10.80 .26	18.1 2.3			
July	8.6	11.91 .23	14.6 1.5	22.97 .36	29.5 3.4	19.88 .23	44.3 1.5	11.04 .23	20.3 2.2			
	18.6	12.12 +.19	13.2 +1.4	23.28 +.26	33.0 +3.6	20.09 +.19	42.9 +1.3	11.26 +.19	22.6 +2.2			
Aug.	28.5	12.28 .15	11.9 1.2	23.48 .16	36.7 3.7	20.26 .15	41.7 1.1	11.43 .15	24.6 2.0			
	7.5	12.41 .10	10.8 1.0	23.58 +.05	40.5 3.8	20.40 .11	40.8 0.9	11.56 .11	26.6 1.9			
	17.5	12.49 .06	10.0 0.8	23.58 —.06	44.3 3.7	20.49 .07	40.0 0.6	11.64 .06	28.4 1.7			
	27.5	12.53 +.02	9.3 0.6	23.46 .16	48.0 3.6	20.53 +.02	39.5 0.4	11.68 +.02	29.9 1.5			
Sept.	6.5	12.52 —.02	8.9 +0.4	23.25 —.26	51.5 +3.4	20.53 —.02	39.2 +0.2	11.68 —.02	31.3 +1.2			
	16.4	12.47 .06	8.6 +0.2	22.94 .35	54.7 3.1	20.49 .06	39.0 +0.1	11.64 .06	32.4 1.0			
	26.4	12.39 .09	8.5 0.0	22.55 .43	57.7 2.8	20.41 .09	39.1 —0.1	11.57 .09	33.2 0.8			
Oct.	6.3	12.29 .11	8.6 —0.1	22.09 .49	60.3 2.4	20.31 .11	39.2 0.2	11.47 .11	33.8 0.5			
	16.3	12.16 .13	8.8 0.2	21.57 .54	62.4 1.9	20.19 .13	39.5 0.3	11.35 .13	34.2 +0.2			
Nov.	26.3	12.03 —.14	9.1 —0.3	21.00 —.58	64.1 +1.4	20.06 —.13	39.9 —0.4	11.22 —.14	34.3 0.0			
	5.3	11.89 .14	9.4 0.4	20.41 .60	65.3 0.9	19.92 .14	40.3 0.4	11.08 .14	34.2 —0.2			
	15.2	11.76 .13	9.9 0.5	19.81 .60	65.9 +0.3	19.79 .13	40.8 0.5	10.94 .13	33.9 0.4			
	25.2	11.64 .11	10.4 0.5	19.21 .59	65.9 —0.3	19.67 .11	41.3 0.5	10.82 .12	33.4 0.6			
Dec.	5.2	11.53 .09	11.0 0.6	18.64 .56	65.2 0.9	19.56 .10	41.8 0.5	10.70 .10	32.6 0.8			
	15.2	11.45 —.07	11.5 —0.6	18.10 —.50	64.0 —1.5	19.48 —.07	42.3 —0.5	10.61 —.06	31.7 —1.0			
	25.1	11.40 .04	12.1 0.6	17.63 .44	62.3 2.0	19.42 .04	42.7 0.5	10.54 .06	30.7 1.1			
	35.1	11.37 —.01	12.7 —0.3	17.23 —.36	60.1 —2.5	19.39 —.01	43.2 —0.4	10.49 —.03	29.5 —1.2			

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	11 Cephei.			μ Capricorni.			79 Draconis.			α Aquarii.		
	Right Ascension.	Declination North.		Right Ascension.	Declination South.		Right Ascension.	Declination North.		Right Ascension.	Declination South.	
	h m	° '		h m	° '		h m	° '		h m	° '	
	21 40	+70 49		21 47	-14 1		21 51	+73 12		22 0	-0 48	
	s	"		s	"		s	"		s	"	
Jan. 0.1	21.25 -.43	87.4 -2.1		40.77 -.04	76.5 -0.2		30.58 -.33	69.0 -2.0		29.51 -.05	73.6 -0.7	
10.1	20.86 .34	85.0 2.5		40.75 -.01	76.6 -0.1		30.10 .43	66.8 2.4		29.47 -.02	74.4 0.7	
20.1	20.56 .24	82.3 2.9		40.75 +.02	76.6 +0.1		29.72 .32	64.2 2.8		29.46 .00	75.1 0.7	
30.0	20.37 .13	79.3 3.1		40.79 .05	76.5 0.2		29.46 .20	61.2 3.0		29.47 +.03	75.7 0.6	
Feb. 9.0	20.30 -.01	76.1 3.2		40.85 .08	76.2 0.4		29.32 -.06	58.1 3.2		29.52 .06	76.2 0.4	
19.0	20.35 +.11	72.9 -3.1		40.95 +.11	75.7 +0.5		29.33 +.08	54.9 -3.1		29.60 +.09	76.5 -0.2	
Mar. 1.0	20.51 .23	69.9 3.0		41.08 .14	75.1 0.7		29.48 .22	51.8 3.0		29.70 .12	76.7 0.0	
10.9	20.80 .34	67.0 2.7		41.23 .17	74.2 0.9		29.76 .35	48.9 2.8		29.84 .15	76.6 +0.2	
20.9	21.20 .45	64.5 2.3		41.42 .20	73.2 1.1		30.17 .47	46.2 2.4		30.01 .19	76.3 0.5	
30.9	21.70 .54	62.4 1.8		41.64 .23	72.0 1.3		30.70 .58	44.0 1.9		30.21 .22	75.6 0.8	
Apr. 9.9	22.28 +.62	60.9 -1.2		41.89 +.26	70.6 +1.5		31.34 +.67	42.3 -1.4		30.44 +.24	74.7 +1.2	
19.8	22.93 .67	59.9 -0.6		42.16 .28	69.1 1.6		32.05 .74	41.2 0.8		30.70 .27	73.6 1.3	
29.8	23.63 .71	59.6 0.0		42.46 .30	67.4 1.7		32.82 .79	40.6 -0.2		30.98 .29	72.2 1.5	
May 9.8	24.34 .72	59.9 +0.6		42.77 .32	65.6 1.8		33.62 .81	40.7 +0.4		31.28 .30	70.6 1.7	
19.7	25.07 .71	60.8 1.2		43.09 .33	63.8 1.8		34.43 .80	41.4 1.0		31.59 .31	68.8 1.9	
29.7	25.77 +.68	62.2 +1.7		43.42 +.33	62.0 +1.8		35.23 +.78	42.7 +1.6		31.91 +.32	66.9 +2.0	
June 8.7	26.44 .64	64.2 2.2		43.74 .32	60.3 1.7		35.99 .73	44.6 2.1		32.23 .31	64.9 2.0	
18.7	27.05 .57	66.7 2.7		44.05 .30	58.6 1.6		36.69 .67	46.9 2.5		32.53 .30	62.9 2.0	
28.6	27.58 .49	69.6 3.1		44.34 .28	57.1 1.4		37.31 .56	49.6 2.9		32.82 .28	60.9 1.9	
July 8.6	28.04 .40	72.8 3.4		44.61 .25	55.8 1.2		37.83 .47	52.8 3.3		33.08 .25	59.0 1.8	
18.6	28.39 +.30	76.3 +3.6		44.84 +.21	54.7 +1.0		38.26 +.36	56.2 +3.5		33.31 +.21	57.2 +1.7	
28.6	28.64 .20	80.0 3.7		45.04 .17	53.8 0.8		38.56 .25	59.8 3.7		33.51 .17	55.5 1.5	
Aug. 7.5	28.78 +.09	83.8 3.8		45.19 .13	53.1 0.6		38.75 +.13	63.6 3.8		33.66 .13	54.1 1.5	
17.5	28.81 -.02	87.6 3.8		45.29 .08	52.7 0.3		38.81 .00	67.4 3.8		33.77 .09	52.9 1.1	
27.5	28.73 .13	91.3 3.7		45.35 +.04	52.4 +0.1		38.75 -.12	71.2 3.7		33.84 .05	51.9 0.9	
Sept. 6.4	28.55 -.23	94.9 +3.5		45.37 .00	52.4 -0.1		38.57 -.23	74.8 +3.6		33.86 +.01	51.1 +0.7	
16.4	28.27 .33	98.3 3.2		45.34 -.04	52.6 0.2		38.28 .34	78.3 3.4		33.85 -.03	50.5 0.5	
26.4	27.90 .41	101.4 2.9		45.28 .07	52.9 0.4		37.89 .44	81.6 3.1		33.80 .06	50.1 0.3	
Oct. 6.4	27.45 .48	104.1 2.5		45.19 .10	53.4 0.5		37.41 .53	84.5 2.7		33.72 .09	50.0 +0.1	
16.3	26.94 .54	106.4 2.1		45.07 .12	53.9 0.5		36.84 .60	87.0 2.5		33.62 .11	50.0 -0.1	
26.3	26.38 -.58	108.3 +1.6		44.94 -.13	54.4 -0.5		36.22 -.65	89.0 +1.8		33.50 -.12	50.2 -0.2	
Nov. 5.3	25.78 .61	109.7 1.1		44.81 .14	54.9 0.5		35.54 .69	90.6 1.3		33.37 .13	50.5 0.4	
15.3	25.17 .62	110.4 +0.5		44.67 .13	55.5 0.5		34.84 .71	91.6 0.7		33.24 .13	50.9 0.5	
25.2	24.55 .61	110.7 -0.1		44.55 .12	56.0 0.5		34.13 .70	92.0 +0.1		33.12 .12	51.4 0.6	
Dec. 5.2	23.95 .58	110.3 0.7		44.44 .10	56.4 0.4		33.44 .68	91.8 -0.5		33.01 .10	52.0 0.6	
15.2	23.38 -.54	109.3 -1.3		44.34 -.08	56.8 -0.3		32.77 -.64	91.0 -1.1		32.92 -.08	52.7 -0.7	
25.1	22.87 .48	107.7 1.8		44.28 .06	57.1 0.2		32.16 .58	89.6 1.7		32.84 .06	53.4 0.7	
35.1	22.43 -.41	105.6 -2.3		44.23 -.03	57.2 -0.1		31.62 -.50	87.7 -2.1		32.79 -.04	54.2 -0.7	

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Gruis.		θ Aquarii.		π Aquarii.		γ Aquarii.	
	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	h m 22 1	° ' " -47 27	h m 22 11	° ' " - 8 17	h m 22 20	° ' " + 0 51	h m 22 30	° ' " - 0 38
	s	"	s	"	s	"	s	"
Jan. 0.1	44.55 -11	46.4 +1.3	23.92 -05	48.7 -0.4	0.99 -06	17.4 -0.7	3.83 -06	53.9 -0.7
10.1	44.47 .06	44.9 1.6	23.88 -05	49.1 0.3	0.94 .04	16.6 0.7	3.78 .04	54.6 0.7
20.1	44.43 -02	43.1 1.9	23.86 .00	49.4 0.2	0.91 -01	15.9 0.7	3.74 -02	55.2 0.6
30.1	44.44 +03	41.1 2.2	23.87 +02	49.5 -0.1	0.91 +01	15.2 0.6	3.73 .00	55.8 0.5
Feb. 9.0	44.49 .08	38.8 2.4	23.91 .05	49.6 +0.1	0.93 .04	14.7 0.5	3.75 +03	56.2 0.4
19.0	44.59 +12	36.4 +2.5	23.98 +08	49.4 +0.2	0.99 +07	14.3 -0.3	3.80 +06	56.6 -0.2
Mar. 1.0	44.73 .16	33.8 2.6	24.08 .11	49.1 0.4	1.07 .10	14.0 -0.1	3.87 .09	56.7 0.0
11.0	44.92 .21	31.2 2.7	24.21 .14	48.6 0.7	1.19 .13	14.0 +0.1	3.98 .13	56.6 +0.2
20.9	45.15 .25	28.5 2.7	24.37 .18	47.8 0.9	1.34 .17	14.3 0.4	4.12 .16	56.2 0.5
30.9	45.42 .29	25.9 2.6	24.56 .21	46.8 1.1	1.53 .20	14.8 0.7	4.30 .19	55.6 0.8
Apr. 9.9	45.74 +33	23.4 +2.5	24.79 +24	45.6 +1.3	1.74 +23	15.6 +1.0	4.51 +22	54.7 +1.0
19.8	46.08 .36	20.9 2.3	25.04 .27	44.2 1.5	1.99 .26	16.7 1.2	4.75 .25	53.6 1.3
29.8	46.46 .39	18.7 2.1	25.32 .29	42.6 1.7	2.26 .28	18.1 1.5	5.01 .28	52.2 1.5
May 9.8	46.87 .41	16.7 1.9	25.62 .31	40.8 1.8	2.55 .30	19.7 1.7	5.30 .30	50.6 1.7
19.8	47.29 .43	14.9 1.6	25.93 .32	38.9 1.9	2.86 .31	21.5 1.9	5.61 .31	48.8 1.9
29.7	47.72 +43	13.5 +1.3	26.25 +32	37.0 +1.9	3.18 +32	23.4 +2.0	5.93 +32	46.8 +2.0
June 8.7	48.15 .42	12.4 0.9	26.57 .32	35.1 1.9	3.50 .31	25.4 2.1	6.24 .32	44.8 2.0
18.7	48.57 .41	11.7 0.5	26.89 .31	33.2 1.8	3.81 .30	27.5 2.1	6.56 .31	42.7 2.0
28.7	48.96 .38	11.3 +0.1	27.18 .29	31.4 1.7	4.10 .28	29.6 2.0	6.86 .29	40.7 2.0
July 8.6	49.33 .34	11.4 -0.2	27.46 .26	29.8 1.6	4.38 .26	31.6 1.9	7.14 .27	38.7 1.9
18.6	49.65 +30	11.8 -0.6	27.70 +23	28.3 +1.4	4.62 +23	33.4 +1.8	7.39 +24	36.9 +1.8
28.6	49.92 .24	12.6 1.0	27.91 .19	27.0 1.2	4.83 .19	35.2 1.7	7.61 .20	35.2 1.6
Aug. 7.5	50.13 .18	13.8 1.3	28.08 .15	26.0 0.9	5.00 .15	36.7 1.5	7.79 .16	33.7 1.4
17.5	50.29 .12	15.2 1.5	28.20 .10	25.2 0.7	5.13 .11	38.1 1.3	7.93 .12	32.4 1.2
27.5	50.37 +06	16.8 1.7	28.28 .06	24.6 0.5	5.22 .06	39.2 1.0	8.02 .07	31.4 0.9
Sept. 6.5	50.40 .00	18.6 -1.8	28.32 +02	24.2 +0.2	5.26 +02	40.1 +0.8	8.08 +03	30.6 +0.7
16.4	50.36 -06	20.5 1.9	28.32 -02	24.1 +0.1	5.26 -01	40.8 0.6	8.09 .00	30.0 0.5
26.4	50.27 .12	22.3 1.8	28.28 .06	24.1 -0.1	5.23 .05	41.3 0.4	8.07 -04	29.6 0.3
Oct. 6.4	50.13 .16	24.1 1.7	28.20 .08	24.3 0.3	5.16 .08	41.5 +0.2	8.01 .07	29.4 +0.1
16.4	49.95 .19	25.7 1.5	28.11 .10	24.6 0.4	5.08 .10	41.6 0.0	7.93 .09	29.4 -0.1
26.3	49.74 -21	27.0 -1.2	27.99 -12	25.1 -0.5	4.97 -11	41.5 -0.2	7.83 -10	29.6 -0.2
Nov. 5.3	49.52 .22	28.0 0.9	27.87 .13	25.6 0.5	4.85 .12	41.2 0.3	7.72 .11	29.9 0.4
15.3	49.29 .22	28.7 0.5	27.74 .12	26.1 0.5	4.73 .12	40.8 0.4	7.60 .12	30.3 0.5
25.2	49.07 .21	29.0 -0.1	27.62 .12	26.7 0.5	4.61 .12	40.3 0.5	7.48 .11	30.8 0.6
Dec. 5.2	48.87 .19	28.9 +0.3	27.51 .11	27.2 0.5	4.50 .11	39.7 0.6	7.37 .11	31.4 0.6
15.2	48.69 -16	28.4 +0.7	27.41 -09	27.8 -0.5	4.40 -09	39.0 -0.7	7.27 -10	32.1 -0.7
25.2	48.54 .13	27.5 1.1	27.33 .07	28.3 0.5	4.31 .08	38.3 0.7	7.18 .08	32.8 0.7
35.1	48.43 -09	26.2 +1.4	27.27 -05	28.7 -0.4	4.25 -05	37.6 -0.7	7.10 -06	33.5 -0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	226 Cephei (B.)		ζ Pegasi.		ι Cephei.		λ Aquarii.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	h m 22 30	° ' " +75 41	h m 22 36	° ' " +10 17	h m 22 45	° ' " +65 39	h m 22 47	° ' " - 8 7
Jan. 0.2	23.88 -71	62.5 -1.4	19.44 -08	41.1 -1.0	58.73 -39	49.1 -1.4	14.66 -08	40.9 -0.4
10.1	23.22 .61	60.7 2.0	19.38 .05	40.1 1.1	58.37 .34	47.5 1.9	14.60 .06	41.3 0.3
20.1	22.65 .50	58.5 2.4	19.33 .03	39.0 1.1	58.05 .28	45.3 2.3	14.55 .03	41.6 0.2
30.1	22.21 .37	55.9 2.8	19.31 -01	37.9 1.1	57.81 .21	42.8 2.7	14.53 -01	41.8 -0.1
Feb. 9.1	21.90 .23	53.0 3.0	19.32 +02	36.8 1.0	57.63 .13	40.0 2.9	14.53 +02	41.8 +0.1
19.0	21.75 -07	49.9 3.1	19.35 +05	35.9 -0.9	57.55 -04	37.0 -3.0	14.56 +05	41.6 +0.3
Mar. 1.0	21.77 +10	46.7 3.1	19.42 .08	35.1 0.7	57.55 +05	34.0 2.9	14.62 .08	41.3 0.5
11.0	21.95 .26	43.7 3.0	19.52 .12	34.5 0.4	57.65 .15	31.1 2.8	14.71 .11	40.7 0.7
20.9	22.29 .42	40.8 2.7	19.65 .15	34.3 -0.1	57.85 .25	28.3 2.6	14.84 .14	39.9 0.9
30.9	22.78 .56	38.3 2.3	19.82 .19	34.3 +0.2	58.14 .34	25.9 2.2	15.00 .18	38.8 1.2
Apr. 9.9	23.41 +69	36.2 -1.9	20.03 +22	34.6 +0.5	58.52 +42	23.9 -1.8	15.20 +21	37.6 +1.4
19.9	24.16 .79	34.5 1.4	20.27 .25	35.3 0.8	58.97 .48	22.4 1.3	15.43 .24	36.1 1.6
29.8	24.99 .87	33.5 0.8	20.53 .28	36.3 1.2	59.49 .54	21.4 0.7	15.68 .27	34.4 1.7
May 9.8	25.89 .92	33.0 -0.2	20.82 .30	37.6 1.5	60.05 .58	21.0 -0.1	15.97 .29	32.6 1.9
19.8	26.82 .94	33.2 +0.4	21.13 .31	39.3 1.7	60.65 .60	21.1 +0.5	16.27 .31	30.7 2.0
29.8	27.76 +93	33.9 +1.0	21.45 +33	41.1 +1.9	61.26 +61	21.9 +1.1	16.59 +32	28.7 +2.0
June 8.7	28.69 .90	35.2 1.6	21.77 .32	43.2 2.1	61.87 .60	23.2 1.6	16.91 .32	26.6 2.0
18.7	29.57 .84	37.0 2.1	22.09 .31	45.3 2.2	62.46 .57	25.1 2.1	17.23 .31	24.7 1.9
28.7	30.37 .76	39.4 2.6	22.39 .29	47.6 2.3	63.01 .53	27.4 2.5	17.54 .30	22.8 1.8
July 8.6	31.09 .66	42.2 3.0	22.67 .27	49.9 2.3	63.51 .47	30.1 2.9	17.83 .28	21.0 1.7
18.6	31.70 +55	45.3 +3.3	22.93 +24	52.2 +2.2	63.95 +41	33.2 +3.2	18.10 +25	19.4 +1.5
28.6	32.19 .42	48.8 3.5	23.15 .20	54.3 2.1	64.32 .33	36.6 3.5	18.33 .22	18.1 1.3
Aug. 7.6	32.55 .28	52.4 3.7	23.33 .16	56.4 2.0	64.62 .25	40.2 3.6	18.53 .18	16.9 1.0
17.5	32.78 .15	56.2 3.7	23.48 .12	58.3 1.8	64.83 .17	43.9 3.7	18.69 .14	16.1 0.8
27.5	32.87 +02	60.0 3.8	23.58 .08	60.0 1.6	64.96 +08	47.6 3.7	18.81 .09	15.4 0.5
Sept. 6.5	32.82 -12	63.8 +3.8	23.63 +04	61.4 +1.4	64.99 .00	51.3 +3.7	18.88 +05	15.0 +0.3
16.5	32.63 .25	67.5 3.6	23.65 .00	62.7 1.1	64.95 -08	54.9 3.5	18.91 +01	14.8 +0.1
26.4	32.32 .37	71.1 3.4	23.63 -03	63.7 0.9	64.83 .16	58.3 3.3	18.90 -02	14.9 -0.1
Oct. 6.4	31.89 .48	74.3 3.1	23.58 .06	64.4 0.6	64.64 .23	61.5 3.0	18.86 .05	15.1 0.3
16.4	31.36 .58	77.3 2.8	23.50 .09	64.9 0.4	64.38 .29	64.4 2.7	18.79 .08	15.5 0.4
26.3	30.73 -67	79.9 +2.3	23.40 -11	65.2 +0.2	64.06 -34	66.9 +2.3	18.70 -10	16.0 -0.5
Nov. 5.3	30.03 .73	82.0 1.8	23.29 .12	65.3 0.0	63.70 .38	68.9 1.8	18.59 .11	16.5 0.6
15.3	29.26 .78	83.6 1.3	23.17 .12	65.2 -0.3	63.30 .41	70.4 1.3	18.48 .11	17.1 0.6
25.3	28.46 .81	84.6 0.7	23.05 .12	64.8 0.5	62.88 .43	71.4 0.7	18.36 .11	17.7 0.6
Dec. 5.2	27.65 .81	85.0 +0.1	22.93 .11	64.2 0.6	62.45 .44	71.8 +0.1	18.25 .11	18.3 0.6
15.2	26.84 -79	84.8 -0.5	22.82 -10	63.5 -0.8	62.01 -43	71.6 -0.5	18.14 -10	18.9 -0.6
25.2	26.07 .74	84.1 1.1	22.73 .09	62.6 0.9	61.59 .41	70.9 1.1	18.05 .09	19.5 0.5
35.2	25.35 -67	82.6 -1.6	22.65 -07	61.6 -1.0	61.20 -37	69.5 -1.6	17.97 -07	19.9 -0.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Piscis Australis. (Fomalhaut.)		α Pegasi. (Markab.)		α Cephei.		θ Piscium.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 22 51	° ' 30 9	h m 22 59	° ' +14 39	h m 23 14	° ' +67 32	h m 23 22	° ' + 5 48
	s	"	s	"	s	"	s	"
Jan. 0.2	57.87 -09	73.0 +0.3	37.81 -09	9.8 -1.1	22.09 -44	73.4 -1.0	44.81 -09	51.1 -0.8
10.2	57.78 .07	72.5 0.6	37.73 .07	8.7 1.1	21.66 .41	72.1 1.5	44.73 .08	50.3 0.8
20.1	57.72 .05	71.8 0.9	37.66 .05	7.5 1.2	21.28 .35	70.3 2.0	44.65 .06	49.5 0.8
30.1	57.68 -02	70.8 1.1	37.62 .05	6.3 1.2	20.96 .29	68.1 2.4	44.60 .04	48.7 0.7
Feb. 9.1	57.67 +01	69.6 1.4	37.60 -01	5.1 1.2	20.71 .21	65.5 2.7	44.57 -02	48.0 0.6
19.0	57.70 +04	68.1 +1.6	37.61 +02	4.0 -1.1	20.54 -11	62.6 -2.9	44.56 +01	47.4 -0.5
Mar. 1.0	57.76 .08	66.4 1.8	37.65 .06	3.0 0.9	20.48 -01	59.7 3.0	44.58 .04	47.0 0.4
11.0	57.85 .11	64.5 2.0	37.73 .09	2.2 0.7	20.51 +09	56.7 2.9	44.63 .07	46.7 -0.2
20.9	57.99 .15	62.4 2.1	37.84 .13	1.6 0.4	20.66 .20	53.8 2.7	44.72 .11	46.7 +0.1
30.9	58.16 .19	60.2 2.2	37.99 .17	1.4 -0.1	20.91 .30	51.2 2.4	44.85 .15	46.9 0.4
Apr. 9.9	58.37 +23	57.9 +2.3	38.18 +21	1.5 +0.2	21.25 +39	49.0 -2.0	45.01 +18	47.4 +0.7
19.9	58.61 .26	55.6 2.3	38.40 .24	1.9 0.6	21.69 .48	47.1 1.6	45.21 .22	48.2 1.0
29.8	58.89 .29	53.3 2.3	38.66 .27	2.7 1.0	22.20 .55	45.8 1.1	45.44 .25	49.3 1.3
May 9.8	59.20 .32	51.0 2.2	38.94 .29	3.8 1.3	22.78 .60	45.0 -0.5	45.71 .28	50.7 1.5
19.8	59.53 .34	48.8 2.1	39.25 .31	5.3 1.6	23.41 .63	44.8 +0.1	46.00 .30	52.4 1.7
29.8	59.88 +35	46.7 +2.0	39.57 +32	7.0 +1.8	24.05 +65	45.1 +0.6	46.31 +31	54.2 +1.9
June 8.7	60.23 .36	44.9 1.8	39.89 .33	8.9 2.0	24.71 .66	46.1 1.2	46.63 .32	56.2 2.0
18.7	60.59 .35	43.2 1.5	40.22 .32	11.1 2.2	25.36 .64	47.5 1.7	46.95 .32	58.3 2.1
28.7	60.93 .34	41.9 1.2	40.53 .31	13.4 2.3	25.99 .60	49.5 2.2	47.26 .31	60.4 2.2
July 8.7	61.26 .31	40.9 0.9	40.83 .29	15.7 2.4	26.57 .55	52.0 2.6	47.57 .29	62.6 2.1
18.6	61.56 +28	40.2 +0.5	41.10 +26	18.1 +2.3	27.09 +49	54.8 +3.0	47.85 +27	64.6 +2.0
28.6	61.83 .25	39.8 +0.2	41.34 .22	20.4 2.3	27.55 .42	58.0 3.3	48.10 .24	66.6 1.9
Aug. 7.6	62.06 .21	39.8 -0.2	41.54 .18	22.7 2.2	27.93 .34	61.4 3.5	48.32 .20	68.5 1.8
17.6	62.23 .16	40.2 0.5	41.71 .14	24.7 2.0	28.23 .25	65.0 3.6	48.51 .17	70.2 1.6
27.5	62.37 .11	40.8 0.8	41.83 .10	26.7 1.8	28.44 .16	68.7 3.7	48.65 .13	71.6 1.4
Sept. 6.5	62.45 +06	41.7 -1.0	41.91 +06	28.4 +1.6	28.56 +08	72.4 +3.7	48.76 +09	72.9 +1.1
16.5	62.49 +01	42.8 1.2	41.95 +02	30.0 1.4	28.59 -01	76.1 3.6	48.82 .05	73.9 0.9
26.4	62.47 -03	44.1 1.3	41.95 -01	31.2 1.2	28.53 .09	79.7 3.5	48.85 +01	74.7 0.7
Oct. 6.4	62.42 .07	45.4 1.3	41.92 .04	32.3 0.9	28.40 .17	83.1 3.3	48.84 -02	75.2 0.4
16.4	62.34 .10	46.8 1.3	41.86 .07	33.0 0.6	28.19 .24	86.2 3.0	48.81 .05	75.5 +0.2
26.4	62.23 -12	48.1 -1.2	41.78 -09	33.6 +0.4	27.91 -31	89.0 +2.6	48.74 -07	75.7 0.0
Nov. 5.3	62.09 .14	49.3 1.1	41.68 .10	33.8 +0.2	27.57 .36	91.4 2.2	48.66 .09	75.6 -0.1
15.3	61.95 .14	50.3 0.9	41.56 .11	33.9 -0.1	27.18 .41	93.3 1.7	48.57 .10	75.4 0.3
25.3	61.80 .15	51.1 0.7	41.45 .12	33.6 0.3	26.76 .44	94.7 1.1	48.46 .10	75.0 0.5
Dec. 5.3	61.66 .14	51.7 0.4	41.33 .12	33.2 0.5	26.30 .46	95.6 +0.5	48.36 .11	74.5 0.6
15.2	61.52 -13	52.0 -0.2	41.21 -11	32.6 0.7	25.84 -47	95.8 -0.1	48.25 -11	73.8 -0.7
25.2	61.40 .11	52.0 +0.1	41.11 .10	31.7 0.9	25.37 .46	95.4 0.6	48.15 .10	73.1 0.7
35.2	61.30 -09	51.8 +0.4	41.02 -09	30.7 -1.1	24.93 -43	94.5 -2.2	48.05 -09	72.4 -0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♈ Piscium.		γ Cephei.		Groombridge 4163.		♉ Piscium.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 23 34	° ' " + 5 4	h m 23 35	° ' " + 77 3	h m 23 49	° ' " + 73 50	h m 23 54	° ' " + 6 17
Jan. 0.2	39.46 -09	9.1 -0.7	3.99 -86	49.4 -0.5	47.49 -67	36.8 -0.4	1.74 -10	40.3 -0.7
10.2	39.37 -08	8.3 0.8	3.16 -81	48.5 1.2	46.84 -64	36.0 1.0	1.65 -09	39.5 0.7
20.2	39.29 -07	7.6 0.8	2.38 -73	47.1 1.7	46.22 -59	34.7 1.6	1.56 -08	38.7 0.7
30.1	39.23 -05	6.8 0.7	1.70 -62	45.1 2.2	45.66 -51	32.9 2.1	1.48 -07	38.0 0.7
Feb. 9.1	39.19 -03	6.1 0.6	1.15 -49	42.7 2.6	45.20 -41	30.6 2.5	1.43 -05	37.3 0.6
19.1	39.17 -00	5.6 -0.5	0.73 -33	39.9 -2.9	44.85 -29	28.0 -2.8	1.39 -02	36.7 -0.5
Mar. 1.1	39.18 +03	5.2 0.3	0.48 -16	37.0 3.0	44.62 -16	25.1 2.9	1.38 +01	36.3 0.4
11.0	39.22 -06	4.9 -0.1	0.41 +02	33.9 3.0	44.53 -02	22.1 3.0	1.40 -04	36.0 -0.2
21.0	39.30 -10	4.9 +0.1	0.53 -20	30.9 3.0	44.58 +13	19.1 2.9	1.46 -08	35.9 +0.1
30.9	39.42 -13	5.2 0.4	0.82 -38	28.0 2.8	44.79 -28	16.2 2.7	1.56 -12	36.1 0.3
Apr. 9.9	39.57 +17	5.8 +0.7	1.29 +55	25.4 -2.4	45.14 +42	13.6 -2.5	1.69 +15	36.6 +0.6
19.9	39.76 -21	6.6 1.0	1.93 -70	23.1 2.0	45.62 -54	11.3 2.1	1.86 -19	37.3 0.9
29.9	39.99 -24	7.7 1.3	2.69 -83	21.4 1.5	46.22 -65	9.5 1.6	2.08 -23	38.4 1.2
May 9.9	40.25 -27	9.1 1.5	3.58 -93	20.1 1.0	46.93 -74	8.1 1.1	2.32 -26	39.7 1.4
19.9	40.53 -29	10.7 1.7	4.55 -100	19.4 -0.4	47.71 -81	7.3 -0.5	2.60 -29	41.2 1.6
29.8	40.84 +31	12.5 +1.9	5.57 +104	19.2 +0.1	48.54 +85	7.0 0.0	2.90 +31	43.0 +1.8
June 8.8	41.15 -32	14.5 2.0	6.63 -105	19.6 0.7	49.41 -87	7.3 +0.6	3.21 -32	44.9 2.0
18.7	41.48 -32	16.5 2.1	7.67 -103	20.6 1.3	50.29 -87	8.2 1.2	3.53 -32	46.9 2.1
28.7	41.80 -31	18.7 2.1	8.69 -99	22.2 1.8	51.14 -84	9.7 1.7	3.85 -32	49.0 2.1
July 8.7	42.11 -30	20.8 2.1	9.65 -92	24.3 2.3	51.96 -79	11.6 2.2	4.17 -31	51.2 2.1
18.7	42.39 +28	22.8 +2.0	10.53 +83	26.8 +2.7	52.73 +72	14.0 +2.6	4.47 +29	53.2 +2.0
28.6	42.66 -25	24.8 1.9	11.31 -72	29.7 3.1	53.41 -64	16.8 3.0	4.74 -26	55.2 1.9
Aug. 7.6	42.89 -21	26.6 1.7	11.97 -60	32.9 3.4	54.01 -55	19.9 3.3	4.98 -23	57.1 1.8
17.6	43.08 -18	28.2 1.5	12.51 -47	36.4 3.6	54.51 -44	23.3 3.5	5.20 -19	58.8 1.6
27.6	43.24 -14	29.6 1.3	12.90 -33	40.1 3.7	54.90 -33	26.9 3.7	5.37 -15	60.3 1.4
Sept. 6.5	43.36 +10	30.8 +1.1	13.16 +18	43.9 +3.8	55.18 +22	30.6 +3.8	5.51 +12	61.5 +1.2
16.5	43.43 -06	31.8 0.8	13.27 +04	47.8 3.8	55.34 +10	34.4 3.8	5.60 -08	62.6 0.9
26.5	43.47 +02	32.5 0.6	13.24 -10	51.5 3.7	55.38 -01	38.2 3.7	5.66 -04	63.4 0.7
Oct. 6.4	43.48 -01	33.0 0.4	13.06 -24	55.2 3.6	55.31 -12	41.8 3.6	5.69 +01	64.0 0.5
16.4	43.45 -04	33.3 +0.2	12.75 -37	58.7 3.3	55.13 -23	45.3 3.4	5.68 -02	64.3 0.3
26.4	43.40 -06	33.4 0.0	12.31 -50	61.9 +3.0	54.85 -33	48.5 +3.1	5.65 -04	64.5 +0.1
Nov. 5.4	43.33 -08	33.2 -0.2	11.75 -61	64.8 2.6	54.47 -43	51.4 2.7	5.59 -06	64.4 -0.1
15.3	43.25 -09	33.0 0.3	11.10 -70	67.2 2.2	54.00 -51	53.9 2.2	5.51 -08	64.2 0.3
25.3	43.15 -10	32.6 0.5	10.35 -78	69.1 1.6	53.45 -57	55.9 1.7	5.43 -09	63.9 0.4
Dec. 5.3	43.05 -10	32.0 0.6	9.54 -83	70.4 1.1	52.85 -62	57.3 1.2	5.33 -10	63.4 0.3
15.3	42.94 -10	31.4 -0.7	8.69 -86	71.2 +0.4	52.20 -66	58.2 +0.6	5.23 -10	62.8 -0.6
25.2	42.84 -10	30.7 0.7	7.82 -86	71.3 -0.2	51.54 -68	58.5 0.0	5.12 -10	62.1 0.7
35.2	42.74 -09	30.0 -0.8	6.96 -84	70.9 -0.7	50.87 -66	58.1 -0.6	5.02 -10	61.4 -0.7

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS,
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Mean Solar Date.	β Cassiop.	α Androm.	σ Androm.	ι Ceti.	6 Urs. Min., S. P.	δ Piscium.	π Androm.	ϵ Cassiop.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s
	31 25 0 3	44 30 0 4	53 47 0 12	99 24 0 14	358 16 0 13	88 38 0 20	56 51 0 31	42 17 0 38
(Dec. 30.2)	40.52 -31	58.05 -20	57.04 -13	11.25 -10	99.90+7.46	7.93 -12	23.15 -18	59.36 -20
Jan. 9.2	40.21 .30	57.85 .19	56.89 .13	11.16 .10	107.35 7.36	7.82 .10	22.98 .16	59.15 .21
19.2	39.93 .27	57.67 .18	56.75 .14	11.06 .09	114.56 6.98	7.73 .08	22.84 .14	58.93 .21
29.1	39.67 -24	57.50 -17	56.61 -14	10.99 -07	121.25+6.32	7.66 -06	22.70 -13	58.73 -20
Aug. 26.6	45.35 +23	62.16 +20	60.84 +20	14.67 +18	57.40-3.32	11.31 +17	26.70 +22	63.25 +26
Sept. 5.5	45.57 .29	62.34 .15	61.02 .13	14.82 .14	54.56 2.35	11.47 .14	26.90 .18	63.48 .21
15.5	45.73 .18	62.47 .10	61.15 .11	14.95 .10	52.71 1.33	11.60 .11	27.06 .14	63.67 .16
25.5	45.81 +06	62.55 .06	61.23 .07	15.02 .06	51.91- .25	11.68 .07	27.16 .09	63.81 .11
Oct. 5.4	45.84 .00	62.59 +02	61.28 +03	15.08 +03	52.21+ .85	11.73 .04	27.23 .05	63.89 .07
15.4	45.82 -03	62.58 -02	61.30 .00	15.08 .00	53.61+1.95	11.76 +01	27.27 +02	63.94 +03
25.4	45.73 .11	62.54 .06	61.28 -04	15.07 -03	56.10 3.03	11.75 -02	27.27 -01	63.94 -02
Nov. 4.4	45.59 .16	62.45 .10	61.23 .07	15.03 .06	59.67 4.08	11.71 .04	27.25 .04	63.90 .06
14.4	45.41 .20	62.33 .13	61.14 .10	14.97 .08	64.25 5.04	11.66 .06	27.19 .07	63.81 .10
24.3	45.18 .24	62.19 .15	61.02 .12	14.87 .09	69.73 5.89	11.58 .08	27.10 .09	63.70 .13
Dec. 4.3	44.94 -26	62.03 -17	60.90 -13	14.78 -10	75.99+6.59	11.49 -09	27.00 -11	63.55 -15
14.3	44.66 .29	61.85 .18	60.76 .14	14.68 .11	82.86 7.10	11.39 .10	26.88 .13	63.39 .17
24.2	44.36 .30	61.66 .19	60.61 .15	14.57 .11	90.14 7.40	11.30 .10	26.75 .15	63.20 .19
34.2	44.06 -31	61.46 -20	60.46 -15	14.46 -10	97.57+7.45	11.19 -11	26.59 -17	63.00 -20
Mean Solar Date.	δ Piscium.	γ Cassiop.	μ Androm.	43 Cephei.	κ Tucanæ.	ζ Piscium.	κ Octantis, S. P.	ν Androm.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s
	82 59 0 43	29 50 0 50	52 4 0 51	4 18 0 54	159 25 1 12	86 55 1 12	184 45 1 24	49 7 1 30
(Dec. 30.2)	20.96 -10	29.65 -31	2.61 -16	36.90-2.72	18.93 -57	30.02 -10	11.40+2.91	45.99 -15
Jan. 9.2	20.86 .10	29.33 .32	2.45 .16	34.17 2.72	18.37 .55	29.91 .11	14.34 2.94	45.83 .17
19.2	20.75 .11	29.01 .32	2.29 .16	31.46 2.68	17.83 .54	29.80 .11	17.28 2.89	45.65 .19
29.1	20.64 -11	28.70 -31	2.12 -17	28.81-2.62	17.30 -53	29.68 -12	20.11+2.74	45.45 -21
Sept. 5.6	24.34 +17	34.38 +27	6.35 +22	55.65+1.60	22.69 +39	33.10 +22	9.74-1.48	49.46 +26
15.6	24.49 .13	34.63 .22	6.54 .17	57.05 1.20	23.03 .29	33.29 .16	8.48 1.03	49.70 .22
25.5	24.60 .09	34.83 .16	6.68 .12	58.04 .78	23.27 .18	33.42 .12	7.68 .58	49.90 .18
Oct. 5.5	24.67 .06	34.95 .10	6.78 .08	58.62+ .36	23.40 +08	33.53 .09	7.31- .11	50.06 .14
15.5	24.72 +03	35.02 +04	6.84 .04	58.77- .08	23.43 -03	33.60 .06	7.44+ .38	50.18 .10
25.5	24.74 .00	35.03 -02	6.87 +01	58.47- .51	23.34 -14	33.65 +03	8.09+ .88	50.25 +06
Nov. 4.4	24.73 -02	34.97 .08	6.86 -02	57.76 .94	23.15 .24	33.67 .00	9.21 1.37	50.30 +03
14.4	24.70 .04	34.86 .14	6.82 .06	56.59 1.35	22.86 .33	33.65 -03	10.84 1.82	50.30 -01
24.4	24.65 .07	34.70 .19	6.74 .09	55.06 1.73	22.49 .41	33.62 .05	12.85 2.20	50.27 .05
Dec. 4.3	24.57 .09	34.48 .23	6.64 .11	53.14 2.08	22.03 .47	33.56 .06	15.25 2.53	50.19 .09
14.3	24.48 -10	34.24 -26	6.52 -13	50.90-2.37	21.54 -51	33.49 -07	17.92+2.75	50.10 -12
24.3	24.37 .10	33.95 .29	6.38 .15	48.40 2.58	21.01 .54	33.39 .09	20.77 2.88	49.96 .14
34.3	24.27 -10	33.65 -31	6.22 -16	45.77-2.72	20.46 -56	33.30 -10	23.72+2.94	49.81 -16

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Mean Solar Date.	π Piscium.	ν Piscium.	ζ Ceti.	γ Androm.	β Trianguli.	δ Urs. Min., S. P.	γ Trianguli.	δ Ceti.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s
	78 23 1 31	85 2 1 36	100 51 1 46	48 10 1 57	55 30 2 3	348 2 2 9	56 38 2 11	96 54 2 11
(Dec. 30.3)	39.26 -10	5.30 -10	23.77 -11	35.65 -16	26.02 -12	13.79 +1.00	12.63 -11	51.99 -08
Jan. 9.3	39.15 .11	5.20 .11	23.66 .11	35.49 .17	25.89 .14	14.83 1.07	12.51 .13	51.90 .10
19.2	39.04 .12	5.09 .12	23.54 .12	35.32 .18	25.74 .15	15.93 1.11	12.36 .15	51.78 .12
29.2	38.91 .12	4.96 .12	23.41 .13	35.14 .19	25.59 .16	17.05 1.11	12.20 .16	51.65 .13
Feb. 8.2	38.80 .12	4.85 .11	23.27 .13	34.94 .18	25.42 .17	18.15 1.07	12.04 .16	51.51 .14
18.2	38.68 -12	4.75 -10	23.15 -12	34.77 -17	25.26 -16	19.19 +1.00	11.87 -17	51.38 -13
Sept. 25.6	42.62 +14	8.56 +14	26.81 +13	39.42 +22	29.56 +19	10.67 - .60	16.08 +20	54.88 +17
Oct. 5.5	42.75 .11	8.69 .11	26.95 .12	39.62 .18	29.74 .17	10.15 .44	16.27 .18	55.04 .14
15.5	42.84 .08	8.78 .08	27.06 .09	39.78 .14	29.90 .14	9.79 .27	16.44 .15	55.17 .11
25.5	42.91 +06	8.85 +06	27.13 +06	39.91 +09	30.02 +10	9.61 - .10	16.57 +11	55.26 +08
Nov. 4.5	42.95 +03	8.90 +03	27.17 +03	39.97 .05	30.10 .06	9.59 + .08	16.65 .08	55.33 .05
14.4	42.96 .00	8.91 .00	27.19 .00	40.01 +02	30.15 +03	9.76 .27	16.72 +04	55.37 +02
24.4	42.94 -03	8.90 -03	27.17 -02	40.02 -02	30.16 -01	10.13 .45	16.73 .00	55.38 .00
Dec. 4.4	42.90 .05	8.85 .05	27.14 .05	39.98 .06	30.14 .04	10.66 .61	16.72 -03	55.37 -03
14.3	42.84 -07	8.80 -07	27.08 -08	39.90 -10	30.09 -08	11.36 + .77	16.68 -07	55.32 -06
24.3	42.75 .09	8.70 .09	26.98 .10	39.79 .13	29.99 .11	12.21 .91	16.59 .10	55.24 .08
34.3	42.65 -10	8.61 -10	26.88 -11	39.64 -16	29.87 -13	13.19 +1.03	16.48 -12	55.15 -09
Mean Solar Date.	δ Hydri.	μ Hydri.	δ Ceti.	θ Persei.	σ Arietis.	δ Cephei.	ϵ Arietis.	β Persei. (Algol.)
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s
	159 8 2 19	169 34 2 33	90 7 2 34	41 12 2 37	75 21 2 45	10 59 2 52	69 4 2 53	49 26 3 1
(Dec. 30.3)	57.83 -53	55.63 -1.14	13.58 -09	11.39 -15	49.76 -08	27.24 - .71	20.80 -08	29.61 -07
Jan. 9.3	57.28 .56	54.45 1.22	13.48 .11	11.23 .18	49.67 .10	26.48 .82	20.71 .10	29.51 .12
19.3	56.70 .58	53.19 1.26	13.38 .12	11.04 .20	49.56 .12	25.61 .92	20.60 .12	29.36 .16
29.2	56.11 .58	51.92 1.26	13.24 .13	10.82 .22	49.43 .13	24.64 .98	20.47 .13	29.19 .18
Feb. 8.2	55.55 .57	50.67 1.23	13.11 .14	10.60 .24	49.29 .14	23.65 1.01	20.33 .14	29.00 .19
18.2	54.98 -57	49.45 -1.18	12.97 -14	10.35 -25	49.15 -14	22.62 -1.04	20.18 -15	28.80 -20
Sept. 25.6	59.90 +35	56.42 + .67	16.32 +20	15.11 +28	52.60 +23	34.59 + .95	23.68 +22	32.85 +20
Oct. 5.6	60.20 .25	57.00 .48	16.51 .17	15.38 .25	52.81 .19	35.48 .82	23.89 .20	33.12 .25
15.5	60.40 .15	57.39 .28	16.66 .14	15.62 .21	52.98 .16	36.23 .67	24.08 .18	33.35 .22
25.5	60.49 +04	57.56 + .05	16.79 +11	15.81 +17	53.13 +13	36.82 + .50	24.26 +15	33.56 +19
Nov. 4.5	60.48 -07	57.49 - .18	16.88 .08	15.96 .12	53.25 .10	37.24 .33	24.39 .11	33.73 .15
14.5	60.35 .18	57.20 .40	16.95 .06	16.05 .08	53.33 .07	37.48 + .16	24.48 .08	33.85 .11
24.4	60.12 .27	56.69 .60	16.99 +02	16.12 +03	53.39 +03	37.57 -03	24.54 .05	33.94 .07
Dec. 4.4	59.81 .36	55.99 .78	16.99 -01	16.12 -02	53.40 .00	37.43 .24	24.58 +02	33.98 +02
14.4	59.40 -44	55.12 - .95	16.97 -04	16.08 -07	53.40 -03	37.10 - .42	24.58 -02	33.98 -02
24.4	58.93 .50	54.09 1.07	16.91 .07	15.97 .12	53.37 .06	36.59 .59	24.55 .05	33.94 .09
34.3	58.41 -54	52.97 -1.16	16.84 -09	15.84 -16	53.28 -09	35.91 - .76	24.47 -09	33.84 -11

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS,
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Mean Solar Date.	ϵ Hydri.	ρ Octantis, S. P.	f Tauri.	γ Camelop.	γ Hydri.	ϵ Persei.	α^1 Tauri.	ϵ Persei.
	$^{\circ}$ 167 46 h m 3 18	$^{\circ}$ 185 53 h m 3 19	$^{\circ}$ 77 25 h m 3 25	$^{\circ}$ 18 59 h m 3 39	$^{\circ}$ 164 33 h m 3 48	$^{\circ}$ 50 17 h m 3 50	$^{\circ}$ 68 12 h m 3 58	$^{\circ}$ 42 34 h m 4 1
(Dec. 30.4)	36.53- .90	24.05+2.22	12.76- .04	32.61- .25	54.28- .61	58.47- .06	38.21- .02	13.31- .05
Jan. 9.3	35.59- .98	26.35 2.37	12.70- .08	32.31- .36	53.62- .71	58.39- .10	38.17- .07	13.23- .10
19.3	34.57- 1.06	28.79 2.49	12.60- .12	31.90- .44	52.86- .79	58.28- .13	38.08- .11	13.10- .15
29.3	33.47- 1.10	31.34 2.56	12.47- .13	31.43- .51	52.03- .86	58.14- .16	37.96- .13	12.94- .19
Feb. 8.3	32.37- 1.20	33.89 2.54	12.34- .14	30.89- .55	51.15- .90	57.96- .19	37.82- .14	12.73- .22
18.2	31.26- 1.09	36.43+2.49	12.19- .15	30.33- .56	50.24- .91	57.76- .20	37.67- .16	12.49- .24
28.2	30.18- 1.08	38.87+2.39	12.04- .15	29.76- .57	49.33- .90	57.55- .21	37.50- .17	12.24- .25
Oct. 5.6	35.85+ .61	33.28- 1.04	15.50+ .22	37.66+ .62	53.00+ .58	61.56+ .32	40.88+ .25	16.54+ .34
15.6	36.37- .43	32.42- .67	15.71- .19	38.25- .55	53.52- .45	61.86- .28	41.12- .24	16.87- .32
25.5	36.71+ .24	31.93- .28	15.89+ .17	38.77+ .47	53.91+ .32	62.11+ .24	41.35+ .22	17.18+ .29
Nov. 4.5	36.86+ .05	31.85+ .15	16.05- .14	39.19- .38	54.17- .18	62.34- .21	41.55- .19	17.44- .25
14.5	36.82- .13	32.23- .58	16.18- .11	39.53- .28	54.28+ .03	62.53- .17	41.72- .15	17.67- .20
24.5	36.59- .31	33.01- .98	16.27- .07	39.75- .16	54.23- .11	62.68- .13	41.86- .11	17.85- .15
Dec. 4.4	36.19- .50	34.19 1.37	16.32- .04	39.85+ .05	54.06- .25	62.78- .08	41.94- .08	17.98- .10
14.4	35.60- .67	35.76+1.72	16.35+ .01	39.84- .07	53.73- .41	62.84+ .03	42.01+ .05	18.05+ .04
24.4	34.86- .81	37.64 2.01	16.35- .02	39.72- .19	53.24- .54	62.85- .01	42.04+ .01	18.06- .01
34.4	33.98- .94	39.79+2.28	16.30- .06	39.47- .30	52.65- .64	62.82- .06	42.02- .04	18.03- .06
Mean Solar Date.	α^1 Eridani.	η Urs. Min., S. P.	δ Mensæ.	m Persei.	τ Tauri.	ϵ Tauri.	ζ Aurigæ.	β Eridani.
	$^{\circ}$ 97 6 h m 4 6	$^{\circ}$ 346 0 h m 4 20	$^{\circ}$ 170 27 h m 4 24	$^{\circ}$ 47 9 h m 4 26	$^{\circ}$ 67 14 h m 4 36	$^{\circ}$ 71 20 h m 4 45	$^{\circ}$ 49 4 h m 4 55	$^{\circ}$ 95 13 h m 5 2
(Dec. 30.4)	52.05- .02	26.41+ .47	63.33- .90	12.44- .02	5.80+ .01	22.94+ .02	19.16+ .03	49.13+ .02
Jan. 9.4	52.01- .07	26.94- .61	62.32 1.10	12.40- .07	5.79- .03	22.94- .02	19.16- .03	49.13- .03
19.4	51.91- .20	27.63- .74	61.13 1.25	12.31- .11	5.74- .08	22.90- .06	19.10- .08	49.08- .07
29.3	51.81- .13	28.42- .83	59.81 1.37	12.18- .15	5.62- .12	22.81- .10	19.00- .13	48.99- .10
Feb. 8.3	51.66- .15	29.29- .90	58.38 1.46	12.01- .19	5.50- .14	22.69- .13	18.85- .17	48.87- .13
18.3	51.52- .16	30.22+ .94	56.90- 1.49	11.80- .21	5.35- .16	22.55- .15	18.66- .20	48.73- .15
28.3	51.35- .17	31.17- .98	55.39 1.50	11.58- .22	5.18- .17	22.39- .16	18.45- .22	48.57- .17
Mar. 10.2	51.18- .17	32.08+ .88	53.90- 1.48	11.36- .22	5.01- .17	22.22- .17	18.23- .23	48.39- .18
Oct. 15.6	54.39+ .21	25.42- .75	58.55+ .84	15.66+ .33	8.48+ .27	25.49+ .25	22.10+ .34	51.11+ .24
25.6	54.59+ .19	24.74- .61	59.30+ .65	15.97+ .30	8.74+ .25	25.74+ .25	22.43+ .32	51.34+ .23
Nov. 4.6	54.77- .17	24.20- .46	59.86- .44	16.26- .26	8.98- .22	25.99- .23	22.74- .29	51.58- .21
14.5	54.93- .14	23.81- .31	60.18+ .20	16.49- .22	9.19- .19	26.20- .20	23.02- .25	51.77- .18
24.5	55.05- .10	23.57- .15	60.26- .05	16.70- .18	9.36- .16	26.38- .16	23.24- .21	51.96- .15
Dec. 4.5	55.13- .06	23.51+ .02	60.08- .30	16.86- .13	9.51- .12	26.52- .13	23.43- .17	52.10- .12
14.5	55.17+ .03	23.62+ .20	59.65- .55	16.95+ .08	9.60+ .08	26.63+ .09	23.58+ .12	52.20+ .08
24.4	55.18- .00	23.91- .37	58.97- .78	17.01+ .03	9.66+ .03	26.70+ .05	23.66+ .06	52.26+ .04
34.4	55.16- .03	24.37+ .54	58.09- .98	17.01- .05	9.67- .01	26.72- .00	23.69- .00	52.29- .00

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.								
Mean Solar Date.	τ Orionis.	χ Aurigæ.	Groombr. 944.	κ Orionis.	ν Aurigæ.	δ Doradus.	β Aurigæ.	θ Aurigæ.
	° /	° /	° /	° /	° /	° /	° /	° /
	96 57 h m 5 12	57 53 h m 5 26	4 51 h m 5 29	99 42 h m 5 42	50 53 h m 5 44	155 46 h m 5 44	45 4 h m 5 52	52 48 h m 5 52
(Dec. 30.5)	38.28 +.02	3.93 +.06	18.20-.16	54.28 +.06	23.67 +.09	38.81 -.13	1.35 +.09	44.55 +.09
Jan. 9.4	38.29 -.02	3.97 +.02	17.78 .66	54.32 +.01	23.73 +.03	38.63 .23	1.41 +.03	44.61 +.04
19.4	38.25 .06	3.96 -.04	16.88 1.13	54.29 -.04	23.73 -.03	38.35 .32	1.41 -.04	44.62 -.02
29.4	38.17 .10	3.89 .09	15.52 1.55	54.23 .08	23.66 .08	37.99 .40	1.34 .09	44.57 .07
Feb. 8.3	38.04 .13	3.78 .13	13.78 1.90	54.12 .11	23.56 .13	37.55 .47	1.23 .14	44.47 .12
18.3	37.91 -.15	3.63 -.16	11.72-2.16	53.99 -.14	23.41 -.17	37.05 -.51	1.06 -.18	44.33 -.16
28.3	37.75 .17	3.46 .18	9.46 2.31	53.84 .16	23.22 .20	36.52 .55	0.86 .22	44.15 .19
Mar. 10.3	37.57 .17	3.27 .19	7.10 2.38	53.66 .18	23.01 .21	35.94 .57	0.63 .25	43.95 .20
20.3	37.40 -.17	3.07 -.20	4.71-2.38	53.49 -.17	22.80 -.21	35.38 -.55	0.37 -.27	43.74 -.21
.
Oct. 25.6	40.41 +.25	6.78 +.31	29.45+2.60	56.19 +.25	26.54 +.36	37.65 +.46	4.28 +.39	47.30 +.35
Nov. 4.6	40.65 .23	7.08 .29	31.91 2.29	56.43 .24	26.89 .33	38.08 .40	4.66 .37	47.64 .33
14.6	40.86 .20	7.36 .26	34.04 1.96	56.67 .22	27.21 .30	38.45 .32	5.01 .33	47.96 .30
24.5	41.05 .17	7.59 .23	35.84 1.58	56.88 .20	27.49 .26	38.72 .28	5.33 .29	48.24 .27
Dec. 4.5	41.20 .13	7.81 .20	37.20 1.13	57.06 .16	27.73 .22	38.91 .14	5.59 .25	48.49 .23
14.5	41.31 +.09	7.98 +.15	38.10+ .64	57.20 +.11	27.93 +.17	38.99 +.04	5.82 +.20	48.70 +.18
24.5	41.37 .05	8.10 .09	38.49+ .14	57.28 .07	28.08 .12	38.98 -.07	5.99 .13	48.86 .12
34.4	41.41 +.02	8.16 +.04	38.38-.33	57.34 +.05	28.16 +.06	38.85 -.18	6.08 +.06	48.95 +.07
Mean Solar Date.	η Geminor.	ψ^1 Aurigæ.	ν Geminor.	χ Draconis, S. P.	ϵ Geminor.	ψ^2 Aurigæ.	θ Geminor.	ζ Mensæ.
	° /	° /	° /	° /	° /	° /	° /	° /
	67 28 h m 6 8	40 40 h m 6 16	69 43 h m 6 22	342 41 h m 6 22	64 46 h m 6 37	46 19 h m 6 39	55 55 h m 6 46	170 42 h m 6 48
(Dec. 30.5)	42.00 +.09	61.22 +.13	53.15 +.10	49.81 +.04	38.12 +.12	21.87 +.16	2.73 +.16	43.90-.17
Jan. 9.5	42.07 +.05	61.32 +.06	53.23 .06	49.91 .16	38.22 .08	22.00 .08	2.86 .10	43.61 .42
19.4	42.10 .00	61.35 .00	53.27 +.01	50.13 .30	38.28 +.03	22.05 +.02	2.93 +.04	43.07 .66
29.4	42.06 -.04	61.31 -.07	53.25 -.04	50.51 .43	38.28 -.03	22.04 -.04	2.93 -.08	42.29 .88
Feb. 8.4	41.98 .09	61.20 .13	53.19 .08	50.99 .53	38.23 .07	21.97 .10	2.89 .07	41.30 1.08
18.4	41.88 -.12	61.05 -.18	53.09 -.11	51.57 +.62	38.13 -.11	21.85 -.15	2.79 -.12	40.12-1.24
28.3	41.74 .15	60.84 .23	52.96 .15	52.24 .70	38.01 .14	21.68 .18	2.65 .15	38.81 1.37
Mar. 10.3	41.58 .17	60.58 .26	52.80 .17	52.99 .74	37.85 .17	21.49 .21	2.48 .18	37.38 1.47
20.3	41.39 .18	60.32 .26	52.62 .18	53.73 .76	37.67 .18	21.26 .23	2.28 .20	35.87 1.32
30.2	41.22 .17	60.05 .26	52.45 .17	54.50 .77	37.49 .18	21.02 .24	2.09 .20	34.34 1.53
Apr. 9.2	41.05 -.17	59.80 -.25	52.29 -.16	55.26 +.76	37.32 -.17	20.79 -.23	1.88 -.20	32.81-1.51
.
Nov. 14.6	44.94 +.29	64.89 +.39	55.98 +.30	50.03 -.58	40.99 +.32	25.18 +.38	5.76 +.35	36.84+ .99
24.6	45.21 .25	65.26 .34	56.26 .26	49.51 .45	41.29 .28	25.54 .34	6.09 .31	37.71 .76
Dec. 4.6	45.44 .22	65.58 .29	56.49 .22	49.12 .33	41.54 .25	25.86 .30	6.38 .27	38.35 .52
14.5	45.64 +.18	65.84 +.24	56.70 +.18	48.84 -.21	41.78 +.21	26.13 +.25	6.63 +.23	38.76 +.27
24.5	45.80 .13	66.06 .18	56.88 .14	48.70 -.06	41.97 .17	26.37 .20	6.84 .19	38.90 +.01
34.5	45.89 +.07	66.20 +.10	56.99 +.09	48.71 +.09	42.11 +.12	26.53 +.12	7.01 +.15	38.78 -.25

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS,
FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Geminor.	63 Aurigæ.	25 Camelop.	γ ^a Volantis.	β Can. Min.	26 Lyncis.	Groombr. 1374.	61 Cancr.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s
	69 17 6 58	50 31 7 4	7 23 7 9	160 20 7 9	81 30 7 21	42 10 7 47	15 48 7 47	64 20 7 54
(Dec. 30.5)	2.40 +.16	37.15 +.19	39.74 +.70	40.65 +.05	36.12 +.16	16.00 +.25	59.11 +.32	44.40 +.21
Jan. 9.5	2.53 .10	37.31 .12	40.26 +.33	40.64 -.08	36.26 .11	16.22 .19	59.54 .33	44.59 .17
19.5	2.60 +.04	37.40 +.05	40.41 -.01	40.50 .19	36.35 .06	16.38 .12	59.78 +.16	44.74 .11
29.4	2.61 .00	37.42 .00	40.24 -.35	40.25 .31	36.38 +.01	16.46 +.05	59.87 .00	44.80 +.05
Feb. 8.4	2.59 -.05	37.39 -.06	39.71 .68	39.87 .42	36.37 -.03	16.47 -.03	59.79 -.16	44.83 .00
18.4	2.51 -.10	37.30 -.11	38.88 -.96	39.41 -.51	36.32 -.07	16.41 -.09	59.54 -.32	44.80 -.05
28.4	2.39 .13	37.16 .15	37.78 1.20	38.85 .59	36.22 .11	16.29 .14	59.16 .44	44.73 .10
Mar. 10.3	2.25 .15	36.99 .19	36.48 1.38	38.23 .64	36.09 .13	16.12 .19	58.66 .55	44.61 .13
20.3	2.09 .17	36.78 .21	35.03 1.48	37.58 .67	35.95 .15	15.91 .23	58.06 .63	44.46 .16
30.3	1.91 .18	36.57 .21	33.52 1.53	36.89 .69	35.78 .17	15.67 .24	57.40 .68	44.29 .17
Apr. 9.2	1.74 -.17	36.36 -.21	31.97 1.52	36.20 -.68	35.62 -.16	15.42 -.24	56.71 -.69	44.13 -.16
19.2	1.58 -.16	36.17 -.19	30.48 1.46	35.53 -.67	35.47 -.15	15.19 -.23	56.02 -.69	43.97 -.16
Nov. 24.6	5.39 +.29	40.56 +.33	48.85 +1.66	39.25 +.46	38.78 +.27	19.35 +.44	64.05 +.32	47.23 +.35
Dec. 4.6	5.66 .25	40.88 .31	50.40 1.44	39.67 .37	39.04 .25	19.76 .39	64.92 .81	47.56 .31
14.6	5.89 +.22	41.18 +.27	51.73 +1.17	40.00 +.27	39.28 +.23	20.12 +.34	65.68 +.70	47.85 +.27
24.5	6.09 .18	41.41 .22	52.75 .86	40.20 .14	39.49 .19	20.44 .29	66.33 .58	48.10 .24
34.5	6.25 +.14	41.61 +.18	53.45 +.55	40.27 +.01	39.66 +.15	20.71 +.24	66.85 +.46	48.33 +.20
Mean Solar Date.	ζ Cancr.	β Cancr.	30 Monocerotis.	θ Chamæleonis.	σ Hydræ.	γ Cancr.	σ ^a Cancr. (mean.)	θ Hydræ.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s
	72 3 8 6	80 30 8 10	93 34 8 20	167 9 8 23	86 18 8 33	68 10 8 37	59 2 8 47	87 15 9 9
(Dec. 30.6)	20.54 +.21	57.87 +.22	32.75 +.22	47.59 +.33	24.57 +.21	21.79 +.25	60.08 +.26	2.22 +.26
Jan. 9.5	20.73 .17	58.06 .17	32.94 .17	47.84 +.16	24.77 .18	22.02 .20	60.32 .22	2.46 .21
19.5	20.87 .12	58.20 .11	33.08 .11	47.92 -.01	24.94 .13	22.20 .15	60.53 .17	2.65 .16
29.5	20.96 .06	58.28 .06	33.15 .06	47.81 .20	25.03 .08	22.32 .09	60.66 .11	2.78 .11
Feb. 8.5	20.99 +.01	58.31 +.01	33.19 +.01	47.52 .37	25.09 +.03	22.38 +.04	60.74 +.06	2.87 .07
18.4	20.98 -.04	58.30 -.03	33.19 -.01	47.07 -.52	25.10 -.02	22.40 .00	60.78 .00	2.92 +.02
28.4	20.91 .09	58.25 .08	33.14 .07	46.45 .68	25.06 .06	22.37 -.06	60.75 -.06	2.91 -.03
Mar. 10.4	20.80 .12	58.14 .11	33.03 .11	45.70 .80	24.97 .09	22.28 .10	60.66 .10	2.86 .07
20.4	20.68 .14	58.02 .13	32.92 .13	44.86 .88	24.87 .12	22.17 .12	60.55 .13	2.77 .10
30.3	20.52 .16	57.87 .15	32.77 .15	43.94 .95	24.73 .14	22.03 .14	60.40 .15	2.66 .11
Apr. 9.3	20.37 -.16	57.73 -.15	32.62 -.15	42.97 -.98	24.59 -.14	21.88 -.15	60.25 -.16	2.54 -.12
19.3	20.21 .16	57.58 .15	32.47 .15	41.97 1.00	24.45 .14	21.73 .15	60.08 .17	2.41 .13
29.2	20.06 .14	57.42 .14	32.32 .15	40.96 1.01	24.30 .14	21.57 .15	59.91 .16	2.27 .14
May 9.2	19.93 -.13	57.30 -.12	32.19 -.13	39.96 1.00	24.17 -.13	21.43 -.14	59.76 -.15	2.14 -.13

**APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS,
FOR THE UPPER TRANSIT AT WASHINGTON.**

Mean Solar Date.	β Argus.	α Lyncis.	ι Leonis Minoris.	ϵ Leonis.	ζ Chamæ- leontis.	ν Leonis Minoris.	π Leonis.	λ Ursæ Ma- joris.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	159 18	55 10	53 9	79 38	170 29	48 27	81 28	46 34
	h m	h m	h m	h m	h m	h m	h m	h m
	9 12	9 14	9 27	9 35	9 36	9 51	9 54	10 10
(Dec. 30.6)	6.51 +.41	49.21 +.32	57.30 +.32	41.05 +.27	58.77+ .86	25.07 +.36	47.97 +.29	55.49 +.38
Jan. 9.6	6.86 .29	49.50 .26	57.60 .27	41.30 .24	59.52 .64	25.41 .31	48.24 .25	55.85 .34
19.6	7.09 .17	49.72 .21	57.85 .23	41.52 .20	60.05 .41	25.70 .25	48.46 .21	56.18 .28
29.5	7.20 +.06	49.91 .16	58.05 .17	41.69 .15	60.34+ .18	25.93 .19	48.65 .17	56.42 .22
Feb. 8.5	7.20 -.06	50.01 .08	58.18 .10	41.82 .10	60.41- .06	26.09 .13	48.79 .12	56.63 .16
18.5	7.08 -.17	50.07 +.03	58.25 +.05	41.88 +.05	60.22- .28	26.19 +.07	48.87 +.07	56.75 +.09
28.5	6.85 .28	50.08 -.03	58.27 -.01	41.91 .00	59.84 .49	26.23 +.01	48.92 +.02	56.81 +.03
Mar. 10.4	6.53 .96	50.02 .08	58.23 .07	41.88 -.04	59.24 .68	26.22 -.05	48.91 -.02	56.82 -.05
20.4	6.13 .43	49.92 .12	58.13 .11	41.82 .08	58.47 .85	26.13 .10	48.87 .06	56.76 .08
30.4	5.67 .49	49.78 .14	58.00 .14	41.72 .10	57.54 .99	26.02 .13	48.78 .09	56.65 .12
Apr. 9.3	5.16 -.32	49.63 -.16	57.85 -.15	41.61 -.12	56.48-1.10	25.87 -.16	48.69 -.10	56.51 -.15
19.3	4.62 .35	49.46 .17	57.69 .17	41.48 .13	55.34 1.18	25.69 .18	48.57 .12	56.34 .17
29.3	4.06 .57	49.28 .18	57.50 .17	41.35 .13	54.11 1.24	25.51 .18	48.45 .12	56.16 .19
May 9.3	3.48 .37	49.11 .17	57.34 .17	41.23 .12	52.85 1.27	25.32 .19	48.33 .13	55.96 .20
19.2	2.93 -.34	48.95 -.16	57.17 -.18	41.10 -.13	51.57-1.29	25.14 -.18	48.20 -.12	55.78 -.19
Mean Solar Date.	μ Hydræ.	β Leonis Minoris.	α Antilæ.	β Octantis, S. P.	δ Leonis Minoris.	δ Chamæ- leontis.	δ Leonis Minoris.	Groombr. 1706.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	106 19	52 46	120 33	188 5	66 16	170 0	55 14	11 41
	h m	h m	h m	h m	h m	h m	h m	h m
	10 21	10 21	10 22	10 35	10 37	10 44	10 47	10 51
Jan. 19.6	8.49 +.22	58.45 +.28	28.12 +.22	29.21- .70	51.28 +.25	52.86+ .81	35.67 +.28	51.28 +.94
29.6	8.69 .18	58.70 .22	28.32 .18	28.64 .44	51.51 .21	53.56 .59	35.93 .24	52.13 .76
Feb. 8.6	8.85 .13	58.89 .17	28.48 .12	28.33- .19	51.70 .17	54.04 .37	36.15 .19	52.80 .56
18.5	8.95 .08	59.03 .11	28.58 .08	28.26+ .05	51.85 .12	54.31+ .17	36.31 .13	53.25 .35
28.5	9.01 +.03	59.10 +.05	28.64 +.03	28.42 .28	51.93 .06	54.38- .03	36.41 .07	53.50 +.14
Mar. 10.5	9.02 -.01	59.12 .00	28.64 -.02	28.81+ .51	51.97 +.02	54.24- .23	36.46 +.02	53.54 -.07
20.4	9.00 .05	59.09 -.05	28.60 .06	29.44 .73	51.96 -.03	53.92 .41	36.46 -.02	53.36 .27
30.4	8.93 .08	59.01 .09	28.52 .09	30.28 .94	51.92 .06	53.42 .58	36.42 .07	53.00 .45
Apr. 9.4	8.84 .09	58.90 .13	28.42 .11	31.33 1.13	51.83 .09	52.76 .72	36.32 .10	52.45 .61
19.4	8.74 .10	58.75 .15	28.30 .13	32.54 1.29	51.74 .11	51.97 .84	36.21 .12	51.78 .73
29.3	8.63 -.12	58.60 -.16	28.16 -.14	33.91+1.43	51.62 -.12	51.07- .96	36.08 -.14	50.99 -.83
May 9.3	8.50 .13	58.43 .17	28.01 .15	35.40 1.53	51.49 .13	50.05 1.03	35.93 .15	50.12 .90
19.3	8.38 .12	58.27 .16	27.87 .14	36.97 1.61	51.36 .13	49.01 1.08	35.79 .15	49.20 .92
29.3	8.26 .12	58.11 .16	27.72 .14	38.62 1.65	51.24 .12	47.90 1.13	35.63 .15	48.28 .91
June 8.2	8.15 -.11	57.96 -.15	27.59 -.14	40.26+1.66	51.12 -.12	46.76-1.15	35.49 -.14	47.38 -.88

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS,
FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Octantis.	ρ^2 Leonis.	ψ Urs. Maj.	ν Urs. Maj.	ξ Hydræ.	χ Urs. Maj.	π Virginis.	ϵ Corvi.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s
	174 2 10 59	87 29 11 1	44 57 11 3	56 21 11 12	121 17 11 27	41 39 11 40	82 49 11 55	112 3 12 4
Feb. 8.6	70.27+ .71	41.21 +.17	55.75 +.23	58.01 +.21	58.19 +.21	40.06 +.28	37.84 +.23	51.61 +.24
18.6	70.82 .39	41.36 .13	55.95 .17	58.20 .16	58.38 .16	40.31 .22	38.05 .19	51.83 .20
28.5	71.05+ .07	41.47 .08	56.09 .10	58.34 .10	58.52 .11	40.50 .16	38.22 .14	52.01 .13
Mar. 10.5	70.96- .26	41.52 +.04	56.13 +.04	58.41 +.05	58.60 .06	40.63 .09	38.33 .09	52.14 .10
20.5	70.53 .56	41.55 .00	56.17 -.02	58.44 .00	58.64 +.02	40.68 +.03	38.40 .06	52.22 .06
30.4	69.83- .85	41.52 -.03	56.12 -.07	58.42 -.04	58.65 -.01	40.69 -.03	38.44 +.03	52.27 +.03
Apr. 9.4	68.82 1.12	41.49 .06	56.02 .11	58.37 .07	58.62 .05	40.63 .09	38.45 -.01	52.29 .00
19.4	67.59 1.35	41.42 .09	55.90 .14	58.27 .10	58.56 .08	40.52 .13	38.43 .04	52.28 -.02
29.4	66.13 1.54	41.32 .10	55.75 .16	58.16 .12	58.47 .11	40.38 .16	38.37 .06	52.25 .05
May 9.3	64.50 1.70	41.23 .10	55.57 .18	58.03 .13	58.36 .12	40.21 .18	38.31 .07	52.18 .08
19.3	62.73-1.81	41.12 -.11	55.39 -.19	57.89 -.14	58.24 -.12	40.02 -.19	38.22 -.09	52.09 -.09
29.3	60.87 1.88	41.02 .10	55.19 -.20	57.75 .15	58.12 .13	39.83 .20	38.14 .09	52.01 .09
June 8.3	58.96 1.91	40.92 .10	55.00 .20	57.59 .15	57.98 .14	39.61 .21	38.04 .10	51.91 .10
18.2	57.06-1.90	40.82 -.10	54.82 -.18	57.45 -.14	57.85 -.13	39.41 -.20	37.94 -.10	51.81 -.10

Mean Solar Date.	α Can. Ven.	δ Urs. Min.	β Corvi.	β Can. Ven.	γ Virginis, (mean.)	β Comæ Berenices.	γ Cassiop., S. P.	δ Cephei, S. P.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s
	48 46 12 11	1 44 12 14	105 57 12 24	48 5 12 28	90 53 12 36	61 54 12 46	330 10 12 50	355 42 12 54
Feb. 8.6	0.73 +.27	67.43+3.48	34.16 +.25	53.76 +.31	28.45 +.25	43.25 +.26	28.42 -.29	26.28-2.28
18.6	0.08 .23	72.31 4.27	34.39 .21	54.04 .25	28.68 .21	43.50 .23	28.16 .22	24.19 1.89
28.6	1.19 .18	75.98 3.02	34.58 .17	54.26 .20	28.87 .17	43.72 .20	27.97 .15	22.49 1.47
Mar. 10.5	1.35 .12	78.36 1.67	34.73 .12	54.44 .15	29.03 .13	43.91 .16	27.85 .09	21.24 1.00
20.5	1.44 .07	79.32+ .26	34.83 .08	54.56 .10	29.14 .10	44.04 .11	27.79 -.02	20.49- .47
30.5	1.49 +.02	78.87-1.12	34.90 +.05	54.63 +.04	29.22 +.07	44.12 +.06	27.81 +.07	20.29+ .08
Apr. 9.5	1.49 -.02	77.07 2.44	34.94 +.02	54.64 -.01	29.27 +.03	44.17 +.02	27.93 .15	20.66 .62
19.4	1.44 .07	73.98 3.66	34.95 -.01	54.61 .05	29.29 .00	44.17 .00	28.12 .23	21.53 1.13
29.4	1.35 .10	69.74 4.72	34.93 .03	54.53 .08	29.27 -.02	44.16 -.03	28.39 .31	22.93 1.62
May 9.4	1.24 .12	64.53 5.62	34.89 .05	54.44 .11	29.25 .04	44.10 .06	28.75 .39	24.76 2.03
19.4	1.10 -.14	58.50-6.32	34.82 -.07	54.31 -.14	29.19 -.06	44.03 -.08	29.17 +.44	26.97+2.38
29.3	0.95 .16	51.89 6.79	34.75 .08	54.16 .15	29.13 .07	43.93 .10	29.63 .48	29.52 2.65
June 8.3	0.78 .17	44.91 7.08	34.66 .09	54.00 .17	29.05 .09	43.82 .11	30.13 .53	32.28 2.84
18.3	0.61 -.17	37.73-7.20	34.57 -.09	53.82 -.18	28.95 -.10	43.71 -.11	30.69 +.57	35.21+3.00

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.								
Mean Solar Date.	δ Muscæ.	ϵ Virginis.	20 Can. Ven.	κ Octantis.	B.A.C. 4536.	m Virginis.	θ Apodis.	π Hydræ.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s
	161 0 12 55	78 29 12 57	48 53 13 12	175 15 13 24	52 17 13 30	98 11 13 36	166 18 13 55	116 11 14 0
Mar. 0.6	15.96 +.45	5.45 +.19	58.31 +.24	27.27 +1.92	14.48 +.25	14.51 +.23	21.90 +.84	32.37 +.24
10.6	16.36 .35	5.62 .16	58.52 .20	29.01 1.56	14.71 .21	14.72 .19	22.68 .72	32.61 .23
20.6	16.66 .26	5.77 .12	58.71 .15	30.39 1.20	14.90 .16	14.89 .16	23.34 .59	32.84 .20
30.5	16.88 .16	5.85 .08	58.82 .09	31.41 .81	15.04 .11	15.04 .13	23.87 .46	33.02 .17
Apr. 9.5	16.98 +.06	5.92 .05	58.89 +.04	32.01 .43	15.13 .07	15.16 .09	24.27 .33	33.17 .13
19.5	17.00 -.03	5.96 +.01	58.91 .00	32.26+ .05	15.17 +.03	15.23 +.06	24.54 +.20	33.29 +.10
29.4	16.92 .12	5.95 -.01	58.90 -.03	32.10- .33	15.18 .00	15.28 .03	24.67 +.07	33.37 .06
May 9.4	16.77 .20	5.94 .03	58.85 .07	31.57 .71	15.16 -.04	15.30 +.01	24.68 -.06	33.41 .03
19.4	16.52 .27	5.89 .05	58.75 .10	30.65 1.07	15.10 .08	15.30 -.01	24.55 .19	33.44 +.01
29.4	16.22 .34	5.83 .07	58.64 .12	29.43 1.38	15.00 .11	15.28 .03	24.30 .30	33.44 -.01
June 8.3	15.84 -.40	5.74 -.09	58.50 -.15	27.92-1.65	14.88 -.13	15.24 -.05	23.94 -.41	33.42 -.04
18.3	15.41 .44	5.66 .10	58.34 .16	26.12 1.89	14.75 .14	15.18 .08	23.47 .52	33.36 .07
28.3	14.94 .47	5.55 .11	58.18 .17	24.12 2.08	14.61 .16	15.09 .09	22.90 .60	33.28 .09
July 8.3	14.48 -.46	5.45 -.10	58.00 -.18	21.95-2.22	14.44 -.17	14.99 -.10	22.27 -.66	33.18 -.11
Mean Solar Date.	δ Bootis.	κ Virginis.	4 Urs. Min.	δ Octantis.	λ Bootis.	λ Virginis.	μ Hydri, S. P.	α Apodis.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s
	64 25 14 5	99 48 14 7	11 58 14 9	173 12 14 10	43 26 14 12	102 54 14 13	190 26 14 33	168 36 14 35
Mar. 20.6	44.81 +.19	26.57 +.18	21.66+ .39	34.45+1.25	31.11 +.22	34.66 +.19	46.35- .84	10.79 +.87
30.6	44.98 .15	26.74 .16	22.15 .39	35.58 1.00	31.31 .18	34.84 .17	45.59 .68	11.60 .74
Apr. 9.5	45.11 .11	26.89 .13	22.43+ .18	36.46 .74	31.46 .12	34.99 .14	44.99 .50	12.28 .60
19.5	45.19 .07	27.00 .10	22.52 .00	37.06 .47	31.55 .07	35.12 .11	44.58 .31	12.80 .44
29.5	45.26 .05	27.08 .06	22.45- .17	37.40+ .20	31.60 +.02	35.20 .07	44.36- .13	13.16 .28
May 9.5	45.29 +.02	27.12 +.04	22.19- .34	37.45- .08	31.60 -.03	35.26 +.04	44.32+ .07	13.36 +.12
19.4	45.29 -.02	27.16 +.02	21.76 .50	37.24 .34	31.55 .07	35.29 +.02	44.51 .27	13.40 -.04
29.4	45.25 .05	27.17 .00	21.18 .64	36.77 .60	31.47 .10	35.31 .00	44.87 .46	13.27 .21
June 8.4	45.19 .07	27.15 -.03	20.47 .76	36.03 .85	31.35 .14	35.29 -.03	45.42 .64	12.98 .37
18.3	45.10 .09	27.10 .05	19.66 .85	35.07 1.06	31.20 .17	35.25 .05	46.14 .79	12.54 .50
28.3	45.01 -.11	27.04 -.08	18.77- .92	33.90-1.25	31.02 -.19	35.19 -.08	46.99+ .92	11.97 -.63
July 8.3	44.88 .13	26.94 .10	17.81 .98	32.58 1.40	30.82 .21	35.09 .10	47.98 1.04	11.27 .74
18.3	44.75 .14	26.84 .11	16.81 1.01	31.11 1.55	30.60 .22	34.99 .11	49.07 1.12	10.49 .83
28.2	44.60 -.15	26.73 -.12	15.79-1.02	29.53-1.65	30.37 -.23	34.88 -.11	50.21+1.15	9.62 -.90

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	33 Bootis.	47 Cephei, S. P.	γ Scorpii.	δ Bootis.	ρ Octantis.	β Cor. Bor.	γ Camelop., S. P.	δ ¹ Apodis.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	45 9	349 1	114 53	56 18	174 7	60 32	341 1	168 26
	h m	h m	h m	h m	h m	h m	h m	h m
	14 35	14 52	14 58	15 11	15 19	15 23	15 39	16 5
Mar. 30.6	3.27 +.21	19.50-.47	5.14 +.22	23.68 +.22	45.33+1.77	37.47 +.22	28.33 -.39	4.57+1.12
Apr. 9.6	3.45 .15	19.13 .27	5.35 .20	23.88 .18	46.97 1.50	37.68 .19	28.01 .25	5.63 .99
19.5	3.57 .10	18.96-.06	5.53 .17	24.04 .14	48.33 1.22	37.85 .16	27.83 -.12	6.56 .86
29.5	3.64 .06	19.02+.16	5.69 .13	24.17 .10	49.40 .91	38.00 .12	27.77 .00	7.35 .71
May 9.5	3.68 +.02	19.29 .38	5.79 .09	24.25 .07	50.14 .58	38.09 .09	27.84 +.12	7.98 .56
19.5	3.67 -.03	19.79+.60	5.87 +.07	24.31 +.04	50.57+.25	38.17 +.06	28.02 +.25	8.47+.40
29.4	3.62 .07	20.48 .78	5.93 .04	24.32 .00	50.64-.09	38.20 +.02	28.35 .39	8.78 .22
June 8.4	3.52 .11	21.34 .92	5.95 +.01	24.30 -.04	50.39 .42	38.19 -.02	28.79 .50	8.92+.05
18.4	3.40 .14	22.32 1.07	5.94 -.03	24.24 .08	49.80 .73	38.16 .06	29.35 .59	8.88-.13
28.3	3.25 .17	23.48 1.20	5.90 .06	24.15 .11	48.93 1.02	38.08 .09	29.97 .66	8.65 .31
July 8.3	3.06 -.20	24.71+1.26	5.82 -.08	24.03 -.14	47.75-1.30	37.99 -.11	30.68 +.74	8.26-.46
18.3	2.85 .22	26.00 1.30	5.73 .10	23.88 .16	46.33 1.53	37.86 .14	31.46 .79	7.73 .60
28.3	2.63 .23	27.32 1.33	5.62 .12	23.72 .18	44.68 1.72	37.71 .16	32.26 .82	7.07 .72
Aug. 7.2	2.39 .24	28.66 1.33	5.48 .14	23.53 .19	42.91 1.80	37.55 .18	33.09 .83	6.30 .83
17.2	2.15 .24	29.98 1.30	5.33 .15	23.34 .20	41.09 1.83	37.36 .18	33.91 .82	5.42 .89
27.2	1.92 -.23	31.26+1.26	5.17 -.16	23.14 -.20	39.25-1.83	37.18 -.18	34.73 +.80	4.52-.91
Mean Solar Date.	♄ Herculis.	σ Cor. Bor. (mean.)	γ Apodis.	η Ura. Min.	η Ophiuchi.	π Herculis.	θ Ophiuchi.	δ Arae.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	44 48	55 53	168 40	14 0	105 36	53 4	114 54	150 36
	h m	h m	h m	h m	h m	h m	h m	h m
	16 5	16 10	16 17	16 20	17 4	17 11	17 15	17 21
Apr. 9.6	33.77 +.25	51.67 +.23	48.25+1.08	34.46 +.61	30.71 +.30	29.64 +.29	43.60 +.33	52.11 +.55
19.6	34.00 .21	51.89 .20	49.25 .94	35.01 .48	30.99 .26	29.92 .26	43.91 .29	52.64 .50
29.6	34.19 .17	52.08 .17	50.12 .78	35.43 .35	31.23 .23	30.17 .23	44.18 .25	53.12 .46
May 9.6	34.35 .13	52.23 .14	50.81 .63	35.70 .20	31.45 .21	30.38 .20	44.41 .23	53.56 .41
19.5	34.45 .08	52.36 .10	51.37 .47	35.82 +.04	31.65 .19	30.57 .16	44.64 .21	53.94 .35
29.5	34.50 +.03	52.42 +.05	51.75+.30	35.78 -.11	31.83 +.16	30.71 +.11	44.84 +.18	54.27 +.28
June 8.5	34.51 -.02	52.45 +.01	51.96+.11	35.60 .26	31.97 .12	30.79 .07	45.00 .14	54.51 .22
18.4	34.47 .07	52.45 -.02	51.96-.08	35.26 .41	32.06 .08	30.86 +.03	45.13 .10	54.70 .15
28.4	34.38 .11	52.41 .06	51.79 .25	34.77 .34	32.13 +.04	30.87 -.01	45.19 .06	54.81 +.07
July 8.4	34.25 .15	52.32 .10	51.45 .42	34.17 .66	32.14 .00	30.84 .06	45.24 +.02	54.84 -.01
18.4	34.08 -.18	52.20 -.14	50.95-.57	33.45 -.76	32.14 -.03	30.75 -.10	45.24 -.02	54.79 -.08
28.3	33.88 .21	52.05 .16	50.30 .70	32.66 .84	32.09 .07	30.63 .14	45.20 .06	54.67 .15
Aug. 7.3	33.65 .24	51.88 .18	49.54 .82	31.78 .90	31.98 .10	30.47 .17	45.11 .11	54.48 .22
17.3	33.40 .26	51.68 .20	48.66 .90	30.86 .94	31.88 .12	30.28 .20	44.98 .14	54.22 .28
27.3	33.12 .27	51.47 .22	47.73 .94	29.90 .97	31.73 .15	30.07 .22	44.84 .16	53.91 .32
Sept. 6.2	32.85 -.27	51.25 -.22	46.78-.94	28.93 -.98	31.58 -.16	29.83 -.24	44.68 -.17	53.57 -.35
16.2	32.58 .26	51.03 .22	45.85 .90	27.95 .94	31.41 .17	29.58 .24	44.50 .18	53.22 .36
26.2	32.32 .23	50.81 .22	44.98 .83	27.05 .86	31.24 .16	29.34 .23	44.32 .17	52.86 .34
Oct. 6.1	32.12 -.18	50.58 -.22	44.20-.71	26.24 -.76	31.10 -.14	29.12 -.20	44.16 -.15	52.54 -.29

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS,
FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Data.	Groombr. 944, S. P.	ϵ Herculis.	θ Herculis.	σ Herculis.	λ Sagittarii.	χ Draconis.	ζ Pavonis.	γ Lyrae.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s
	355 9 17 28	43 56 17 36	52 44 17 52	61 15 18 3	115 29 18 21	17 19 18 22	161 31 18 31	57 27 18 55
May 19.6	55.37- .39	36.46 +.20	45.99 +.21	34.26 +.22	40.39 +.26	57.68 +.42	7.81 +.66	7.98 +.23
29.6	55.20+ .05	36.63 .15	46.18 .16	34.46 .18	40.64 .24	58.04 .29	8.43 .57	8.22 .23
June 8.5	55.48 .32	36.75 .09	46.32 .12	34.62 .14	40.87 .21	58.27 .17	8.96 .47	8.43 .19
18.5	56.24 .96	36.81 +.05	46.42 .07	34.74 .10	41.06 .16	58.39 +.06	9.37 .37	8.61 .15
28.5	57.41 1.39	36.84 .00	46.47 +.03	34.81 .06	41.20 .12	58.39 -.07	9.69 .26	8.73 .10
July 8.4	59.02+1.78	36.80 -.07	46.49 -.02	34.85 +.02	41.30 +.08	58.25 -.20	9.89 +.12	8.81 +.06
18.4	60.98 2.10	36.70 .12	46.44 .07	34.84 -.03	41.36 +.04	57.99 .31	9.94 -.01	8.85 +.02
28.4	63.23 2.40	36.56 .16	46.35 .11	34.79 .08	41.37 -.01	57.62 .43	9.87 .13	8.84 -.04
Aug. 7.4	65.79 2.67	36.38 .20	46.22 .13	34.68 .12	41.33 .06	57.14 .52	9.68 .23	8.77 .08
17.3	68.57 2.85	36.16 .24	46.05 .18	34.55 .15	41.25 .10	56.57 .62	9.40 .34	8.67 .13
27.3	71.49+2.99	35.90 -.27	45.86 -.22	34.38 -.18	41.13 -.13	55.91 -.69	8.99 -.44	8.52 -.16
Sept. 6.3	74.55 3.09	35.62 .29	45.63 .23	34.20 .20	40.98 .15	55.19 .75	8.51 .52	8.35 .19
16.3	77.66 3.12	35.32 .30	45.37 .26	33.99 .21	40.82 .17	54.42 .78	7.95 .57	8.14 .21
26.2	80.76 3.06	35.02 .29	45.12 .23	33.78 .21	40.64 .18	53.63 .79	7.37 .58	7.93 .22
Oct. 6.2	83.79 2.99	34.74 .28	44.89 .24	33.56 .21	40.46 .18	52.83 .80	6.78 .59	7.70 .23
16.2	86.73+2.89	34.47 -.27	44.65 -.24	33.36 -.20	40.29 -.17	52.04 -.79	6.20 -.98	7.48 -.22
Mean Solar Data.	ϵ Lyrae.	α Camelop. S. P.	θ Lyrae.	β Cygni.	β Sagittae.	δ Cygni.	Groombr. 1374, S. P.	ϵ Pavonis.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s
	54 4 19 3	352 37 19 9	52 3 19 12	62 15 19 26	72 46 19 36	45 7 19 41	344 12 19 47	163 11 19 48
May 29.6	40.31 +.23	26.09- .62	50.14 +.23	36.74 +.24	28.14 +.23	47.82 +.29	53.89- .36	48.76 +.78
June 8.6	40.53 .20	25.61 .34	50.37 .21	36.97 .22	28.38 .23	48.09 .23	53.59 .23	49.50 .70
18.6	40.72 .16	25.41- .06	50.56 .17	37.18 .19	28.59 .20	48.32 .20	53.42- .11	50.16 .68
28.5	40.85 .11	25.50+ .23	50.71 .12	37.35 .14	28.78 .16	48.50 .15	53.37+ .02	50.70 .48
July 8.5	40.94 .06	25.87 .51	50.80 .07	37.46 .10	28.91 .11	48.63 .10	53.47 .16	51.12 .56
18.5	40.97 +.02	26.53+ .79	50.85 +.03	37.54 +.06	29.00 +.08	48.70 +.04	53.69+ .28	51.42 +.23
28.4	40.97 -.03	27.45 1.03	50.86 -.03	37.57 .00	29.06 +.03	48.71 -.02	54.02 .40	51.57 +.08
Aug. 7.4	40.90 .08	28.60 1.26	50.80 .08	37.55 -.05	29.06 -.02	48.67 .07	54.49 .52	51.58 -.06
17.4	40.80 .12	29.97 1.47	50.69 .13	37.48 .09	29.03 .07	48.57 .12	55.05 .62	51.45 .20
27.4	40.65 .16	31.53 1.66	50.54 .17	37.37 .12	28.93 .10	48.43 .16	55.70 .71	51.18 .33
Sept. 6.3	40.47 -.20	33.28+1.81	50.36 -.20	37.23 -.15	28.83 -.13	48.24 -.21	56.48+ .80	50.80 -.44
16.3	40.26 .22	35.15 1.92	50.14 .22	37.06 .18	28.68 .15	48.02 .24	57.30 .86	50.31 .54
26.3	40.03 .23	37.11 2.01	49.91 .24	36.87 .20	28.52 .17	47.76 .26	58.20 .93	49.73 .60
Oct. 6.3	39.79 .24	39.17 2.07	49.65 .25	36.66 .21	28.34 .18	47.49 .27	59.16 .97	49.11 .64
16.2	39.56 .23	41.25 2.05	49.41 .24	36.46 .20	28.16 .18	47.21 .28	60.15 .98	48.46 .65
26.2	39.32 -.23	43.27+2.02	49.18 -.23	36.26 -.19	27.98 -.17	46.94 -.27	61.13+ .99	47.80 -.64
Nov. 5.2	39.12 -.22	45.28+2.00	48.96 -.22	36.08 -.18	27.83 -.14	46.67 -.27	62.13+1.00	47.17 -.62

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS,
FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Sagittæ.	ϵ Sagittarii.	θ Aquilæ.	ζ Cygni.	α Delphini.	β Pavonis.	ψ Capricor.	ϵ Cygni.
	° ' ''	° ' ''	° ' ''	° ' ''	° ' ''	° ' ''	° ' ''	° ' ''
	70 47 h m 19 54	118 0 h m 19 56	91 8 h m 20 6	43 34 h m 20 10	74 27 h m 20 34	156 34 h m 20 35	115 38 h m 20 40	56 25 h m 20 42
June 18.6	13.73 +.22	23.65 +.24	2.80 +.22	26.13 +.22	54.29 +.25	47.84 +.56	3.71 +.29	5.46 +.26
28.6	13.93 .17	23.88 .22	3.01 .20	26.34 .20	54.52 .21	48.35 .46	3.98 .24	5.70 .22
July 8.6	14.08 .13	24.08 .18	3.19 .16	26.52 .15	54.71 .18	48.76 .38	4.20 .21	5.90 .18
18.5	14.18 .09	24.24 .13	3.33 .12	26.63 .08	54.87 .13	49.11 .29	4.40 .18	6.06 .13
28.5	14.26 +.05	24.34 .07	3.42 .07	26.68 +.03	54.97 .08	49.34 .18	4.56 .11	6.16 .08
Aug. 7.5	14.28 .00	24.39 +.03	3.46 +.03	26.68 -.03	55.03 +.04	49.47 +.07	4.63 +.06	6.22 +.03
17.4	14.26 -.03	24.39 -.03	3.47 -.02	26.61 .09	55.06 .00	49.49 -.03	4.68 +.02	6.22 -.02
27.4	14.18 .09	24.34 .07	3.42 .06	26.49 .14	55.03 -.05	49.42 .12	4.67 -.03	6.19 .05
Sept. 6.4	14.08 .12	24.25 .11	3.35 .09	26.33 .18	54.96 .08	49.24 .23	4.63 .07	6.10 .10
16.4	13.96 .13	24.12 .14	3.25 .12	26.13 .23	54.87 .12	48.96 .31	4.53 .11	5.98 .13
26.3	13.79 -.17	23.97 -.16	3.11 -.15	25.87 -.26	54.73 -.14	48.63 -.38	4.41 -.13	5.81 -.17
Oct. 6.3	13.62 .17	23.80 .17	2.95 .15	25.61 .27	54.59 .16	48.21 .43	4.26 .13	5.64 .19
16.3	13.44 .18	23.62 .18	2.81 .14	25.33 .28	54.42 .17	47.77 .45	4.10 .16	5.43 .20
26.2	13.26 .18	23.44 .17	2.66 .15	25.06 .27	54.26 .16	47.31 .46	3.93 .17	5.24 .20
Nov. 5.2	13.09 .16	23.28 .15	2.50 .14	24.78 .26	54.10 .15	46.85 .44	3.76 .16	5.03 .20
15.2	12.95 -.13	23.14 -.13	2.38 -.11	24.53 -.24	53.96 -.14	46.42 -.41	3.62 -.14	4.84 -.19
25.2	12.84 -.10	23.03 -.10	2.28 -.09	24.30 -.22	53.82 -.13	46.04 -.35	3.48 -.13	4.66 -.18
Mean Solar Date.	τ Cygni.	ζ Capricor.	γ Cygni.	λ^1 Octantis.	ζ Chamæle- ontis, S. P.	π^A Cygni.	ι Pegasi.	π Pegasi.
	° ' ''	° ' ''	° ' ''	° ' ''	° ' ''	° ' ''	° ' ''	° ' ''
	52 24 h m 21 10	112 51 h m 21 20	50 3 h m 21 32	173 12 h m 21 35	189 31 h m 21 36	41 10 h m 21 43	64 34 h m 21 48	57 20 h m 22 5
July 8.6	43.95 +.23	51.34 +.24	52.32 +.24	25.69 +.140	46.05 -.78	2.31 +.26	25.69 +.25	27.84 +.26
18.6	44.15 .17	51.56 .20	52.54 .19	26.95 1.12	45.34 .68	2.55 .21	25.92 .20	28.08 .22
28.5	44.29 .11	51.75 .16	52.71 .15	27.92 .82	44.79 .43	2.74 .16	26.10 .16	28.28 .18
Aug. 7.5	44.38 .06	51.88 .10	52.84 .10	28.58 .49	44.48 -.21	2.88 .10	26.24 .11	28.44 .13
17.5	44.41 +.01	51.96 .05	52.88 +.04	28.90 +.16	44.37 .00	2.94 +.04	26.32 .06	28.53 .08
27.5	44.40 -.04	51.99 +.01	52.90 -.01	28.89 -.17	44.47 +.23	2.95 -.01	26.37 +.02	28.60 +.03
Sept. 6.4	44.33 .09	51.99 -.03	52.86 .06	28.55 .51	44.86 .47	2.92 .06	26.37 -.02	28.61 -.01
16.4	44.23 .13	51.94 .08	52.77 .11	27.86 .84	45.43 .68	2.82 .12	26.33 .07	28.59 .06
26.4	44.08 .16	51.84 .11	52.64 .14	26.87 1.12	46.20 .88	2.67 .17	26.24 .10	28.50 .10
Oct. 6.4	43.91 .19	51.72 .13	52.48 .18	25.63 1.36	47.19 1.07	2.47 .21	26.13 .12	28.40 .12
16.3	43.71 -.20	51.59 -.15	52.29 -.20	24.16 -1.54	48.34 +1.22	2.26 -.23	26.00 -.14	28.26 -.14
26.3	43.51 .20	51.43 .16	52.09 .20	22.55 1.67	49.63 1.32	2.02 .23	25.85 .15	28.13 .16
Nov. 5.3	43.31 .20	51.28 .15	51.89 .21	20.82 1.73	50.98 1.38	1.77 .26	25.70 .16	27.95 .18
15.2	43.10 .20	51.13 .14	51.68 .20	19.09 1.71	52.39 1.40	1.51 .26	25.53 .16	27.78 .18
25.2	42.91 .19	51.00 .12	51.48 .19	17.40 1.63	53.77 1.35	1.25 .23	25.39 .14	27.60 .17
Dec. 5.2	42.73 -.17	50.88 -.11	51.29 -.18	15.83 -1.48	55.09 +1.27	1.02 -.22	25.25 -.12	27.45 -.14

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS,
FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ν Octantis.	γ Aquarii.	σ Aquarii.	α Lacertæ.	$\iota\alpha$ Lacertæ.	β Octantis.	λ Pegasi.	Groombr. 1706, S. P.
	°	°	°	°	°	°	°	°
	176 29 h m 22 12	91 54 h m 22 16	101 12 h m 22 25	40 15 h m 22 27	51 29 h m 22 34	171 55 h m 22 35	66 59 h m 22 41	348 19 h m 22 51
July 8.6	26.98+1.96	23.57 +.25	15.26 +.26	5.74 +.31	41.30 +.30	44.97+1.42	37.20 +.27	45.01- .65
18.6	29.69 2.45	23.81 .22	15.51 .24	6.03 .28	41.58 .25	46.30 1.23	37.46 .25	44.41 .53
28.6	31.89 1.98	24.02 .19	15.74 .20	6.30 .23	41.81 .21	47.44 1.01	37.70 .21	43.94 .41
Aug. 7.6	33.54 1.36	24.18 .15	15.92 .16	6.50 .17	42.01 .17	48.33 .77	37.89 .16	43.60 .26
17.5	34.61 .75	24.32 .10	16.06 .11	6.63 .11	42.15 .12	48.98 .51	38.03 .12	43.38- .13
27.5	35.03+ .09	24.39 +.05	16.14 +.07	6.70 +.05	42.24 +.07	49.36+ .23	38.13 +.08	43.33+ .02
Sept. 6.5	34.79- .57	24.42 +.02	16.20 +.03	6.73 .00	42.28 +.02	49.45- .06	38.20 +.04	43.41 .17
16.4	33.89 1.20	24.42 -.01	16.21 .00	6.70 -.06	42.28 -.02	49.24 .35	38.22 .00	43.67 .33
26.4	32.39 1.80	24.40 .05	16.19 -.04	6.61 .11	42.24 .07	48.74 .68	38.19 -.04	44.08 .49
Oct. 6.4	30.29 2.35	24.33 .08	16.12 .07	6.49 .15	42.14 .11	48.00 .86	38.14 .07	44.65 .63
16.4	27.68-2.80	24.24 -.10	16.04 -.10	6.32 -.18	42.02 -.13	47.02-1.07	38.04 -.10	45.34+ .77
26.3	24.69 3.14	24.13 .11	15.92 .12	6.13 .21	41.89 .15	45.85 1.24	37.94 .11	46.20 .90
Nov. 5.3	21.37 3.39	24.01 .12	15.80 .12	5.91 .23	41.73 .17	44.53 1.37	37.82 .12	47.16 1.01
15.3	17.91 3.48	23.88 .12	15.68 .12	5.66 .23	41.55 .18	43.10 1.45	37.69 .12	48.23 1.12
25.3	14.41 3.45	23.77 .11	15.55 .12	5.41 .24	41.37 .18	41.62 1.46	37.55 .14	49.42 1.29
Dec. 5.2	11.00-3.28	23.65 -.10	15.44 -.11	5.18 -.23	41.19 -.18	40.18-1.41	37.41 -.13	50.62+1.22
15.2	7.84-3.00	23.56 -.09	15.33 -.11	4.95 -.22	41.01 -.18	38.80-1.34	37.29 -.12	51.86+1.24
Mean Solar Date.	α Androm.	ϕ Aquarii.	τ Pegasi.	λ Androm.	ϵ^1 Aquarii.	δ Sculptoria.	γ^1 Octantis.	33 Piscium.
	°	°	°	°	°	°	°	°
	48 14 h m 22 57	96 36 h m 23 9	66 49 h m 23 15	44 6 h m 23 32	108 51 h m 23 38	118 42 h m 23 43	172 35 h m 23 46	96 17 h m 24 0
July 28.6	14.29 +.25	3.05 +.22	35.75 +.24	34.76 +.31	55.34 +.27	37.56 +.28	15.34+1.37	7.28 +.25
Aug. 7.6	14.52 .20	3.26 .19	35.97 .20	35.04 .25	55.59 .25	37.82 .24	16.63 1.20	7.52 .23
17.6	14.70 .15	3.44 .15	36.15 .26	35.26 .20	55.79 .19	38.04 .20	17.75 .98	7.74 .20
27.5	14.83 .10	3.57 .11	36.29 .12	35.44 .15	55.97 .15	38.23 .16	18.60 .70	7.92 .16
Sept. 6.5	14.90 +.05	3.66 .07	36.38 .08	35.57 .10	56.09 .10	38.37 .11	19.16 .40	8.06 .12
16.5	14.92 .00	3.71 +.03	36.44 +.04	35.64 +.05	56.17 +.06	38.45 +.07	19.41+ .10	8.15 +.09
26.5	14.91 -.05	3.73 .00	36.46 .00	35.67 +.01	56.22 +.03	38.49 +.03	19.37- .21	8.23 .05
Oct. 6.4	14.83 .09	3.71 -.03	36.44 -.04	35.66 -.03	56.22 -.01	38.51 -.01	18.99 .52	8.25 +.01
16.4	14.73 .12	3.67 .06	36.39 .07	35.60 .07	56.20 .04	38.47 .05	18.33 .80	8.25 -.02
26.4	14.61 .14	3.58 .09	36.30 .09	35.50 .11	56.14 .07	38.40 .09	17.39 1.06	8.22 .04
Nov. 5.3	14.46 -.16	3.48 -.10	36.21 -.10	35.37 -.14	56.04 -.09	38.29 -.11	16.20-1.29	8.17 -.06
15.3	14.29 .18	3.38 .10	36.10 .12	35.22 .16	55.95 .10	38.18 .12	14.81 1.46	8.09 .08
25.3	14.10 .19	3.27 .11	35.97 .13	35.04 .18	55.83 .11	38.06 .13	13.28 1.57	8.00 .09
Dec. 5.3	13.91 .19	3.16 .11	35.85 .12	34.85 .19	55.72 .12	37.92 .14	11.67 1.63	7.90 .10
15.2	13.73 .18	3.05 .10	35.73 .12	34.66 .19	55.60 .12	37.78 .14	10.02 1.64	7.80 .10
25.2	13.56 -.12	2.95 -.08	35.61 -.12	34.46 -.20	55.48 -.12	37.64 -.14	8.39-1.58	7.69 -.11
35.2	13.38 -.12	2.89 -.05	35.49 -.12	34.26 -.20	55.37 -.11	37.51 -.13	6.86-1.45	7.59 -.10

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ' "	"	s	"	m s	' "	m s	h m s
Jan. 1	18 50 32.38	33.14	-22 56 45.5	44.6	11.098	+13.32	+ 4 6.85	16 18.36	1 11.02	18 46 25.62
2	18 54 56.97	57.80	22 51 12.1	11.0	11.017	14.46	4 34.86	16 18.35	1 10.97	18 50 22.18
3	18 59 21.17	22.09	22 45 11.4	10.1	11.000	15.59	5 2.52	16 18.34	1 10.92	18 54 18.74
4	19 3 44.97	45.98	22 38 43.7	42.2	10.982	16.71	5 29.77	16 18.33	1 10.87	18 58 15.30
5	19 8 8.32	9.41	22 31 49.0	47.0	10.965	17.82	5 56.58	16 18.31	1 10.81	19 2 11.86
6	19 12 31.21	32.38	-22 24 27.4	25.4	10.948	+18.93	+ 6 22.91	16 18.29	1 10.75	19 6 8.42
7	19 16 53.58	54.83	22 16 39.6	37.2	10.921	20.04	6 48.74	16 18.26	1 10.68	19 10 4.97
8	19 21 15.42	16.74	22 8 25.4	22.8	10.898	21.13	7 14.02	16 18.23	1 10.60	19 14 1.53
9	19 25 36.70	38.09	21 59 45.3	42.5	10.875	22.20	7 38.74	16 18.19	1 10.52	19 17 58.09
10	19 29 57.39	58.85	21 50 39.5	36.4	10.850	23.27	8 2.88	16 18.15	1 10.44	19 21 54.65
11	19 34 17.47	19.01	-21 41 8.4	4.9	10.823	+24.32	+ 8 26.41	16 18.11	1 10.36	19 25 51.21
12	19 38 36.92	38.51	21 31 12.2	8.4	10.796	25.35	8 49.29	16 18.06	1 10.28	19 29 47.76
13	19 42 55.71	57.37	21 20 50.9	46.8	10.769	26.38	9 11.53	16 18.01	1 10.19	19 33 44.32
14	19 47 13.83	15.55	21 10 5.2	0.8	10.741	27.40	9 33.10	16 17.95	1 10.10	19 37 40.88
15	19 51 31.26	33.04	20 58 55.2	50.4	10.712	28.41	9 53.98	16 17.89	1 10.01	19 41 37.44
16	19 55 48.00	49.83	-20 47 21.3	16.2	10.683	+29.40	+10 14.15	16 17.81	1 9.92	19 45 34.00
17	20 0 4.02	5.90	20 35 23.8	18.4	10.653	30.38	10 33.61	16 17.73	1 9.82	19 49 30.55
18	20 4 19.32	21.24	20 22 62.9	57.2	10.623	31.35	10 52.35	16 17.65	1 9.72	19 53 27.11
19	20 8 33.88	35.86	20 10 19.0	12.9	10.592	32.30	11 10.35	16 17.56	1 9.62	19 57 23.67
20	20 12 47.70	49.71	19 57 12.5	6.1	10.560	33.23	11 27.61	16 17.46	1 9.52	20 1 20.23
21	20 17 0.75	2.82	-19 43 43.6	36.9	10.528	+34.16	+11 44.11	16 17.36	1 9.41	20 5 16.78
22	20 21 13.06	15.16	19 29 52.7	45.6	10.496	35.07	11 59.86	16 17.25	1 9.30	20 9 13.34
23	20 25 24.60	26.74	19 15 40.0	32.6	10.464	35.96	12 14.83	16 17.14	1 9.19	20 13 9.90
24	20 29 35.36	37.53	19 0 66.1	58.3	10.432	36.84	12 29.04	16 17.02	1 9.08	20 17 6.46
25	20 33 45.35	47.56	18 46 11.3	3.2	10.400	37.71	12 42.46	16 16.89	1 8.97	20 21 3.01
26	20 37 54.55	56.77	-18 30 55.8	47.3	10.367	+38.56	+12 55.09	16 16.76	1 8.86	20 24 59.57
27	20 42 2.95	5.20	18 15 20.1	11.3	10.334	39.39	13 6.93	16 16.62	1 8.75	20 28 56.13
28	20 46 10.56	12.84	17 59 24.6	15.6	10.301	40.21	13 17.98	16 16.49	1 8.63	20 32 52.68
29	20 50 17.36	19.67	17 43 9.8	0.5	10.267	41.02	13 28.22	16 16.35	1 8.52	20 36 49.24
30	20 54 23.36	25.69	17 26 35.8	26.3	10.233	41.80	13 37.65	16 16.20	1 8.41	20 40 45.80
31	20 58 28.53	30.88	-17 9 43.4	33.5	10.199	+42.56	+13 46.26	16 16.06	1 8.29	20 44 42.35
Feb. 1	21 2 32.90	35.26	16 52 32.8	22.7	10.165	43.30	13 54.07	16 15.91	1 8.17	20 48 38.91
2	21 6 36.46	38.82	16 34 64.5	54.1	10.131	44.03	14 1.05	16 15.75	1 8.06	20 52 35.46
3	21 10 39.18	41.55	16 17 18.8	8.3	10.097	44.75	14 7.21	16 15.60	1 7.95	20 56 32.02
4	21 14 41.09	43.47	15 59 16.4	5.5	10.063	45.44	14 12.55	16 15.44	1 7.83	21 0 28.58
5	21 18 42.16	44.55	-15 40 57.5	46.4	10.028	+46.12	+14 17.06	16 15.27	1 7.72	21 4 25.13
6	21 22 42.41	44.80	15 22 22.6	11.3	9.994	46.77	14 20.76	16 15.11	1 7.61	21 8 21.69
7	21 26 41.86	44.25	15 3 32.2	20.8	9.960	47.41	14 23.64	16 14.94	1 7.50	21 12 18.25
8	21 30 40.48	42.87	14 44 26.6	15.0	9.926	48.03	14 25.70	16 14.77	1 7.38	21 16 14.80
9	21 34 38.30	40.69	14 24 66.4	54.7	9.893	48.63	14 26.97	16 14.59	1 7.27	21 20 11.36
10	21 38 35.32	37.70	-14 5 31.9	20.0	9.860	+49.22	+14 27.42	16 14.41	1 7.16	21 24 7.91
11	21 42 31.55	33.93	13 45 43.7	31.5	9.827	49.79	14 27.09	16 14.23	1 7.05	21 28 4.47
12	21 46 27.01	29.36	13 25 41.8	29.7	9.793	50.34	14 25.97	16 14.04	1 6.95	21 32 1.02
13	21 50 21.70	24.04	13 5 27.1	14.8	9.764	50.88	14 24.10	16 13.85	1 6.84	21 35 57.58
14	21 54 15.63	17.96	12 44 59.7	47.3	9.733	51.40	14 21.47	16 13.66	1 6.74	21 39 54.13
15	21 58 8.83	11.13	-12 24 20.0	7.5	9.702	+51.89	+14 18.10	16 13.46	1 6.63	21 43 50.69
16	22 2 1.31	3.59	-12 3 28.4	16.0	9.672	+52.38	+14 14.02	16 13.25	1 6.53	21 47 47.24

NOTE.—For mean time interval of semidiameter passing meridian subtract 0.19 from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ' "	"	s	"	m s	' "	m s	h m s
Feb. 16	22 2 1.31	3.59	-12 3 28.4	16.0	9.672	+32.38	+14 14.02	16 13.25	1 6.53	21 47 47.24
17	22 5 53.07	55.34	11 42 25.4	12.8	9.643	52.85	14 9.23	16 13.04	1 6.43	21 51 43.80
18	22 9 44.15	46.40	11 20 71.3	58.7	9.615	53.30	14 3.74	16 12.82	1 6.33	21 55 40.35
19	22 13 34.57	36.80	10 59 46.6	34.0	9.587	53.75	13 57.60	16 12.60	1 6.23	21 59 36.91
20	22 17 24.33	26.54	10 37 71.4	58.8	9.560	54.17	13 50.80	16 12.38	1 6.14	22 3 33.46
21	22 21 13.46	15.63	-10 16 26.4	13.8	9.534	+54.57	+13 43.37	16 12.15	1 6.05	22 7 30.02
22	22 25 1.97	4.11	9 54 31.8	19.3	9.509	54.96	13 35.31	16 11.92	1 5.96	22 11 26.57
23	22 28 49.87	51.99	9 32 28.0	15.5	9.484	55.34	13 26.66	16 11.69	1 5.87	22 15 23.12
24	22 32 37.19	39.29	9 10 15.6	3.2	9.460	55.69	13 17.43	16 11.45	1 5.78	22 19 19.68
25	22 36 23.96	26.01	8 47 54.9	42.5	9.437	56.03	13 7.63	16 11.21	1 5.70	22 23 16.23
26	22 40 10.17	12.20	-8 25 26.1	13.9	9.414	+56.35	+12 57.28	16 10.97	1 5.61	22 27 12.79
27	22 43 55.83	57.84	8 2 49.8	37.7	9.393	56.66	12 46.40	16 10.73	1 5.53	22 31 9.34
28	22 47 41.00	42.96	7 39 66.4	54.4	9.372	56.95	12 34.99	16 10.48	1 5.45	22 35 5.90
Mar. 1	22 51 25.65	27.58	7 17 16.4	4.5	9.351	57.21	12 23.10	16 10.23	1 5.38	22 39 2.45
2	22 55 9.82	11.71	6 54 20.1	8.4	9.331	57.46	12 10.71	16 9.98	1 5.31	22 42 59.00
3	22 58 53.52	55.37	-6 31 18.0	6.4	9.311	+57.70	+11 57.85	16 9.74	1 5.25	22 46 55.56
4	23 2 36.75	38.57	6 7 70.4	59.0	9.292	57.91	11 44.52	16 9.49	1 5.18	22 50 52.11
5	23 6 19.54	21.32	5 44 57.8	46.5	9.274	58.12	11 30.76	16 9.24	1 5.12	22 54 48.66
6	23 10 1.90	3.63	5 21 40.5	29.5	9.257	58.30	11 16.56	16 8.98	1 5.06	22 58 45.22
7	23 13 43.86	45.56	4 58 19.3	8.4	9.241	58.46	11 1.97	16 8.73	1 5.01	23 2 41.77
8	23 17 25.42	27.08	-4 34 54.1	43.6	9.225	+58.61	+10 46.98	16 8.48	1 4.95	23 6 38.33
9	23 21 6.61	8.23	4 11 25.6	15.3	9.209	58.75	10 31.62	16 8.22	1 4.90	23 10 34.88
10	23 24 47.43	49.02	3 47 54.2	44.2	9.194	58.86	10 15.90	16 7.97	1 4.85	23 14 31.43
11	23 28 27.93	29.46	3 24 20.1	10.3	9.180	58.97	9 59.84	16 7.71	1 4.80	23 18 27.99
12	23 32 8.10	9.59	3 0 43.8	34.2	9.167	59.05	9 43.45	16 7.45	1 4.76	23 22 24.54
13	23 35 47.99	49.43	-2 36 65.7	56.3	9.156	+59.12	+9 26.78	16 7.19	1 4.72	23 26 21.09
14	23 39 27.59	28.98	2 13 26.1	16.9	9.145	59.18	9 9.83	16 6.93	1 4.68	23 30 17.65
15	23 43 6.94	8.29	1 49 45.3	36.4	9.135	59.22	8 52.63	16 6.66	1 4.65	23 34 14.20
16	23 46 46.06	47.36	1 25 63.6	55.1	9.126	59.24	8 35.21	16 6.39	1 4.62	23 38 10.75
17	23 50 24.98	26.23	1 2 21.5	13.2	9.117	59.25	8 17.57	16 6.12	1 4.59	23 42 7.31
18	23 54 3.71	4.92	-0 38 39.1	31.2	9.110	+59.26	+7 59.75	16 5.85	1 4.57	23 46 3.86
19	23 57 42.29	43.46	-0 14 57.1	49.5	9.105	59.24	7 41.78	16 5.57	1 4.55	23 50 0.41
20	0 1 20.73	21.85	+0 8 44.5	51.8	9.100	59.21	7 23.68	16 5.30	1 4.53	23 53 56.97
21	0 4 59.07	60.14	0 32 25.1	32.2	9.095	59.17	7 5.47	16 5.02	1 4.51	23 57 53.52
22	0 8 37.33	38.35	0 56 4.7	11.4	9.093	59.12	6 47.16	16 4.74	1 4.50	0 1 50.07
23	0 12 15.52	16.50	+1 19 42.7	49.1	9.091	+59.05	+6 28.80	16 4.46	1 4.49	0 5 46.63
24	0 15 53.66	54.59	1 43 18.8	24.9	9.090	58.96	6 10.40	16 4.18	1 4.48	0 9 43.18
25	0 19 31.79	32.68	2 6 52.6	58.4	9.089	58.86	5 51.98	16 3.89	1 4.48	0 13 39.73
26	0 23 9.92	10.76	2 30 23.9	29.4	9.089	58.74	5 33.56	16 3.61	1 4.48	0 17 36.29
27	0 26 48.07	48.86	2 53 52.2	57.4	9.090	58.61	5 15.17	16 3.33	1 4.48	0 21 32.84
28	0 30 26.26	27.01	+3 17 17.2	22.0	9.091	+58.47	+4 56.81	16 3.04	1 4.48	0 25 29.40
29	0 34 4.51	5.22	3 40 38.5	43.0	9.094	58.30	4 38.51	16 2.76	1 4.49	0 29 25.95
30	0 37 42.83	43.49	4 3 55.6	59.9	9.097	58.12	4 20.29	16 2.48	1 4.50	0 33 22.50
31	0 41 21.26	21.87	4 27 8.5	12.3	9.102	57.93	4 2.16	16 2.20	1 4.51	0 37 19.05
32	0 44 59.80	60.36	4 50 16.4	20.0	9.103	57.72	3 44.14	16 1.92	1 4.53	0 41 15.61
33	0 48 38.46	38.99	+5 13 19.2	22.6	9.113	+57.50	+3 26.25	16 1.64	1 4.55	0 45 12.16
34	0 52 17.26	17.74	+5 36 16.3	19.4	9.119	+57.26	+3 8.50	16 1.36	1 4.57	0 49 8.72

NOTE.—For mean time interval of semidiameter passing meridian, subtract 0.18 from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ' "	"	°	"	m s	"	m s	h m s
Apr. 1	0 44 59.80	60.36	+ 4 50 16.4	20.0	9.128	+37.72	+3 44.14	16 1.92	I 4.53	0 41 15.61
2	0 48 38.46	38.99	5 13 19.2	22.6	9.113	37.50	3 26.23	16 1.64	I 4.53	0 45 12.16
3	0 52 17.26	17.74	5 36 16.3	19.4	9.119	37.26	3 8.50	16 1.36	I 4.57	0 49 8.72
4	0 55 56.21	56.65	5 59 7.6	10.4	9.126	37.00	2 50.91	16 1.09	I 4.60	0 53 5.27
5	0 59 35.33	35.73	6 21 52.6	55.0	9.134	36.73	2 33.48	16 0.82	I 4.63	0 57 1.82
6	1 3 14.64	14.99	+ 6 44 30.9	33.1	9.142	+36.45	+2 16.24	16 0.55	I 4.66	1 0 58.38
7	1 6 54.15	54.45	7 7 2.2	4.1	9.151	36.16	1 59.20	16 0.28	I 4.69	1 4 54.93
8	1 10 33.88	34.14	7 29 26.2	27.7	9.160	35.84	1 42.37	16 0.01	I 4.73	1 8 51.48
9	1 14 13.84	14.05	7 51 42.4	43.6	9.170	35.51	1 25.78	15 59.74	I 4.77	1 12 48.04
10	1 17 54.04	54.22	8 13 50.5	51.6	9.181	35.17	1 9.44	15 59.47	I 4.81	1 16 44.59
11	1 21 34.52	34.65	+ 8 35 50.3	51.2	9.193	+34.81	+0 53.36	15 59.21	I 4.85	1 20 41.15
12	1 25 15.29	15.38	8 57 41.5	42.1	9.205	34.44	0 37.58	15 58.94	I 4.90	1 24 37.70
13	1 28 56.34	56.40	9 19 23.7	24.0	9.218	34.06	0 22.10	15 58.68	I 4.94	1 28 34.25
14	1 32 37.74	37.75	9 40 56.5	56.7	9.232	33.67	+0 6.93	15 58.42	I 4.99	1 32 30.81
15	1 36 19.46	19.44	10 2 19.7	19.6	9.246	33.26	-0 7.90	15 58.16	I 5.04	1 36 27.36
16	1 40 1.54	1.48	+10 23 33.0	32.6	9.261	+32.84	-0 22.37	15 57.89	I 5.10	1 40 23.92
17	1 43 44.00	43.90	10 44 36.0	35.5	9.277	32.41	0 36.47	15 57.63	I 5.16	1 44 20.47
18	1 47 26.86	26.72	11 5 28.5	27.7	9.294	31.96	0 50.17	15 57.36	I 5.22	1 48 17.03
19	1 51 10.11	9.95	11 26 10.1	9.1	9.312	31.50	1 3.46	15 57.10	I 5.28	1 52 13.58
20	1 54 53.81	53.61	11 46 40.6	39.4	9.330	31.03	1 16.32	15 56.84	I 5.34	1 56 10.14
21	1 58 37.95	37.72	+12 6 59.5	58.2	9.349	+30.55	-1 28.72	15 56.58	I 5.40	2 0 6.69
22	2 2 22.56	22.29	12 27 6.6	5.2	9.368	30.04	1 40.68	15 56.32	I 5.47	2 4 3.25
23	2 6 7.64	7.35	12 47 1.6	0.1	9.388	29.53	1 52.14	15 56.06	I 5.53	2 7 59.80
24	2 9 53.22	52.89	13 6 44.1	42.4	9.409	29.01	2 3.13	15 55.80	I 5.60	2 11 56.35
25	2 13 39.28	38.92	13 26 13.8	12.0	9.430	28.47	2 13.62	15 55.54	I 5.67	2 15 52.91
26	2 17 25.85	25.48	+13 45 30.4	28.5	9.452	+27.91	-2 23.60	15 55.29	I 5.74	2 19 49.46
27	2 21 12.95	12.55	14 4 33.5	31.5	9.474	27.34	2 33.06	15 55.04	I 5.82	2 23 46.02
28	2 25 0.58	0.14	14 23 22.7	20.6	9.496	26.76	2 41.99	15 54.79	I 5.89	2 27 42.58
29	2 28 48.73	48.28	14 41 57.8	55.6	9.518	26.16	2 50.40	15 54.54	I 5.97	2 31 39.13
30	2 32 37.41	36.95	15 0 18.3	16.0	9.540	25.55	2 58.26	15 54.30	I 6.04	2 35 35.69
May 1	2 36 26.65	26.16	+15 18 24.0	21.6	9.563	+24.93	-3 5.59	15 54.06	I 6.12	2 39 32.24
2	2 40 16.43	15.92	15 36 14.5	12.1	9.585	24.28	3 12.36	15 53.83	I 6.20	2 43 28.80
3	2 44 6.75	6.22	15 53 49.5	47.1	9.608	23.63	3 18.59	15 53.60	I 6.28	2 47 25.35
4	2 47 57.62	57.08	16 11 8.6	6.2	9.631	22.97	3 24.27	15 53.37	I 6.37	2 51 21.91
5	2 51 49.05	48.49	16 28 11.6	9.1	9.654	22.29	3 29.40	15 53.15	I 6.45	2 55 18.47
6	2 55 41.02	40.45	+16 44 58.1	55.6	9.677	+21.39	-3 33.99	15 52.93	I 6.53	2 59 15.02
7	2 59 33.55	32.97	17 1 27.7	25.2	9.700	20.88	3 38.03	15 52.72	I 6.61	3 3 11.58
8	3 3 26.62	26.02	17 17 40.3	37.8	9.723	20.16	3 41.50	15 52.51	I 6.69	3 7 8.13
9	3 7 20.25	19.65	17 33 35.6	33.1	9.746	19.44	3 44.43	15 52.30	I 6.77	3 11 4.69
10	3 11 14.44	13.83	17 49 13.1	10.6	9.769	18.69	3 46.80	15 52.10	I 6.86	3 15 1.25
11	3 15 9.19	8.57	+18 4 32.7	30.3	9.793	+17.94	-3 48.61	15 51.89	I 6.94	3 18 57.80
12	3 19 4.49	3.86	18 19 34.2	31.8	9.816	17.18	3 49.86	15 51.69	I 7.02	3 22 54.36
13	3 22 60.35	59.73	18 34 17.1	14.7	9.839	16.41	3 50.56	15 51.49	I 7.10	3 26 50.91
14	3 26 56.77	56.14	18 48 41.3	39.0	9.862	15.62	3 50.71	15 51.30	I 7.18	3 30 47.47
15	3 30 53.76	53.13	19 2 46.5	44.2	9.886	14.82	3 50.28	15 51.10	I 7.26	3 34 44.03
16	3 34 51.30	50.67	+19 16 32.4	30.1	9.910	+14.01	-3 49.28	15 50.91	I 7.34	3 38 40.59
17	3 38 49.41	48.79	+19 29 58.8	56.6	9.933	+13.19	-3 47.73	15 50.72	I 7.42	3 42 37.14

NOTE.—For mean time interval of semidiameter passing meridian, subtract 0.18 from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ' "	"	s	"	m s	' "	m s	h m s
May 17	3 38 49.41	48.79	+19 29 58.8	56.6	9.933	+33.19	-3 47.73	15 50.72	1 7.42	3 42 37.14
18	3 42 48.10	47.47	19 43 5.4	3.4	9.957	32.36	3 45.62	15 50.53	1 7.50	3 46 33.70
19	3 46 47.32	46.70	19 55 52.1	50.1	9.980	31.52	3 42.94	15 50.34	1 7.58	3 50 30.26
20	3 50 47.11	46.50	20 8 18.3	16.4	10.003	30.67	3 39.72	15 50.16	1 7.66	3 54 26.81
21	3 54 47.46	46.86	20 20 24.1	22.3	10.026	29.81	3 35.93	15 49.97	1 7.73	3 58 23.37
22	3 58 48.36	47.77	+20 32 9.0	7.4	10.049	+28.94	-3 31.59	15 49.79	1 7.80	4 2 19.93
23	4 2 49.79	49.21	20 43 33.0	31.4	10.071	28.05	3 26.71	15 49.62	1 7.87	4 6 16.49
24	4 6 51.75	51.19	20 54 35.6	34.2	10.093	27.16	3 21.30	15 49.45	1 7.94	4 10 13.04
25	4 10 54.25	53.69	21 5 16.8	15.4	10.114	26.26	3 15.38	15 49.28	1 8.01	4 14 9.60
26	4 14 57.24	56.71	21 15 36.1	34.7	10.135	25.35	3 8.94	15 49.12	1 8.08	4 18 6.16
27	4 19 0.72	0.20	+21 25 33.5	32.2	10.155	+24.43	-3 2.01	15 48.96	1 8.15	4 22 2.72
28	4 23 4.70	4.20	21 35 8.6	7.4	10.175	23.50	2 54.60	15 48.81	1 8.21	4 25 59.27
29	4 27 9.12	8.64	21 44 21.3	20.2	10.194	22.56	2 46.73	15 48.66	1 8.27	4 29 55.83
30	4 31 14.01	13.55	21 53 11.4	10.4	10.212	21.62	2 38.41	15 48.51	1 8.33	4 33 52.39
31	4 35 19.31	18.88	22 1 38.5	37.7	10.230	20.66	2 29.65	15 48.37	1 8.39	4 37 48.95
June 1	4 39 25.01	24.61	+22 9 42.8	41.9	10.246	+19.70	-2 20.51	15 48.24	1 8.44	4 41 45.51
2	4 43 31.10	30.73	22 17 23.7	23.1	10.262	18.73	2 10.99	15 48.11	1 8.50	4 45 42.06
3	4 47 37.56	37.20	22 24 41.3	40.7	10.276	17.75	2 1.09	15 47.98	1 8.55	4 49 38.62
4	4 51 44.35	44.03	22 31 35.5	34.9	10.290	16.76	1 50.85	15 47.86	1 8.60	4 53 35.18
5	4 55 51.47	51.17	22 38 5.9	5.4	10.303	15.77	1 40.30	15 47.75	1 8.65	4 57 31.74
6	4 59 58.88	58.61	+22 44 12.5	12.1	10.315	+14.78	-1 29.44	15 47.65	1 8.69	5 1 28.30
7	5 4 6.57	6.34	22 49 55.1	54.7	10.326	13.78	1 18.31	15 47.54	1 8.73	5 5 24.86
8	5 8 14.52	14.32	22 55 13.8	13.4	10.336	12.78	1 6.91	15 47.44	1 8.77	5 9 21.41
9	5 12 22.70	22.56	23 0 8.2	8.0	10.346	11.77	0 55.28	15 47.34	1 8.80	5 13 17.97
10	5 16 31.11	30.98	23 4 38.5	38.3	10.355	10.76	0 43.43	15 47.25	1 8.83	5 17 14.53
11	5 20 39.72	39.62	+23 8 44.4	44.3	10.363	+9.75	-0 31.39	15 47.16	1 8.86	5 21 11.09
12	5 24 48.49	48.43	23 12 25.9	25.9	10.369	8.73	0 19.16	15 47.07	1 8.88	5 25 7.65
13	5 28 57.43	57.41	23 15 42.9	42.9	10.375	7.71	0 6.77	15 46.99	1 8.90	5 29 4.21
14	5 33 6.51	6.53	23 18 35.4	35.4	10.381	6.69	+0 5.75	15 46.91	1 8.92	5 33 0.76
15	5 37 15.72	15.77	23 21 3.3	3.3	10.386	5.66	0 18.41	15 46.83	1 8.94	5 36 57.32
16	5 41 25.04	25.12	+23 23 6.5	6.5	10.390	+4.63	+0 31.16	15 46.76	1 8.95	5 40 53.88
17	5 45 34.43	34.56	23 24 44.9	44.9	10.393	3.60	0 44.00	15 46.69	1 8.96	5 44 50.44
18	5 49 43.91	44.06	23 25 58.7	58.7	10.395	2.56	0 56.90	15 46.62	1 8.97	5 48 47.00
19	5 53 53.42	53.61	23 26 47.6	47.6	10.397	1.53	1 9.86	15 46.56	1 8.97	5 52 43.56
20	5 58 2.95	3.19	23 27 11.8	11.8	10.397	+0.50	1 22.84	15 46.50	1 8.97	5 56 40.12
21	6 2 12.49	12.77	+23 27 11.0	11.0	10.397	-0.54	+1 35.83	15 46.44	1 8.97	6 0 36.67
22	6 6 22.00	22.31	23 26 45.6	45.6	10.396	1.57	1 48.79	15 46.38	1 8.96	6 4 33.23
23	6 10 31.48	31.83	23 25 55.3	55.3	10.393	2.61	2 1.71	15 46.33	1 8.95	6 8 29.79
24	6 14 40.90	41.28	23 24 40.2	40.0	10.390	3.64	2 14.56	15 46.29	1 8.94	6 12 26.35
25	6 18 50.21	50.62	23 23 0.3	0.1	10.386	4.67	2 27.32	15 46.25	1 8.92	6 16 22.91
26	6 22 59.40	59.86	+23 20 55.7	55.5	10.381	-3.69	+2 39.96	15 46.22	1 8.90	6 20 19.47
27	6 27 8.46	8.96	23 18 26.5	26.1	10.373	6.72	2 52.46	15 46.19	1 8.87	6 24 16.02
28	6 31 17.34	17.87	23 15 32.8	32.3	10.365	7.74	3 4.78	15 46.17	1 8.84	6 28 12.58
29	6 35 26.03	26.59	23 12 14.4	13.9	10.357	8.76	3 16.91	15 46.15	1 8.81	6 32 9.14
30	6 39 34.48	35.08	23 8 31.6	31.0	10.347	9.78	3 28.82	15 46.14	1 8.78	6 36 5.70
31	6 43 42.71	43.32	+23 4 24.6	23.9	10.336	-10.79	+3 40.47	15 46.14	1 8.75	6 40 2.26
32	6 47 50.63	51.29	+22 59 53.4	52.6	10.324	-11.80	+3 51.84	15 46.14	1 8.71	6 43 58.82

NOTE.—For mean time interval of semidiameter passing meridian subtract 0.19 from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ' "	"	s	"	m s	' "	m s	h m s
July 1	6 43 42.71	43.32	+23 4 24.6	23.9	10.336	-10.79	+3 40.47	15 46.14	1 8.75	6 40 2.26
2	6 47 50.63	51.29	22 59 53.4	52.6	10.324	11.80	3 51.84	15 46.14	1 8.71	6 43 58.82
3	6 51 58.26	58.95	22 54 58.0	57.2	10.311	12.80	4 2.93	15 46.14	1 8.67	6 47 55.37
4	6 56 5.57	6.30	22 49 38.8	37.8	10.297	13.80	4 13.68	15 46.15	1 8.63	6 51 51.93
5	7 0 12.54	13.30	22 43 55.7	54.7	10.283	14.78	4 24.08	15 46.17	1 8.58	6 55 48.49
6	7 4 19.13	19.91	+22 37 49.1	47.9	10.267	-15.76	+4 34.12	15 46.19	1 8.53	6 59 45.05
7	7 8 25.34	26.15	22 31 18.9	17.5	10.250	16.73	4 43.75	15 46.22	1 8.48	7 3 41.61
8	7 12 31.14	31.98	22 24 25.4	23.9	10.233	17.70	4 53.00	15 46.25	1 8.43	7 7 38.17
9	7 16 36.52	37.38	22 17 8.8	7.2	10.215	18.67	5 1.82	15 46.28	1 8.37	7 11 34.73
10	7 20 41.47	42.34	22 9 29.2	27.5	10.197	19.63	5 10.21	15 46.32	1 8.31	7 15 31.28
11	7 24 45.96	46.86	+22 1 26.9	25.1	10.178	-20.57	+5 18.14	15 46.36	1 8.25	7 19 27.84
12	7 28 49.98	50.90	21 52 61.8	59.9	10.158	21.50	5 25.63	15 46.41	1 8.19	7 23 24.40
13	7 32 53.53	54.47	21 44 14.4	12.3	10.138	22.43	5 32.61	15 46.46	1 8.12	7 27 20.96
14	7 36 56.60	57.55	21 35 4.6	2.5	10.118	23.35	5 39.12	15 46.51	1 8.05	7 31 17.51
15	7 40 59.18	60.15	21 25 32.9	30.6	10.097	24.27	5 45.14	15 46.56	1 7.98	7 35 14.07
16	7 45 1.24	2.23	+21 15 39.4	37.0	10.076	-25.18	+5 50.64	15 46.62	1 7.91	7 39 10.63
17	7 49 2.81	3.80	21 5 24.1	21.5	10.054	26.08	5 55.65	15 46.68	1 7.83	7 43 7.19
18	7 53 3.85	4.85	20 54 47.2	44.6	10.032	26.97	6 0.12	15 46.74	1 7.75	7 47 3.75
19	7 57 4.36	5.38	20 43 49.3	46.5	10.010	27.85	6 4.08	15 46.81	1 7.67	7 51 0.30
20	8 1 4.35	5.37	20 32 30.2	27.4	9.988	28.72	6 7.50	15 46.88	1 7.59	7 54 56.86
21	8 5 3.78	4.81	+20 20 50.5	47.5	9.965	-29.58	+6 10.38	15 46.96	1 7.51	7 58 53.42
22	8 9 2.67	3.70	20 8 50.2	47.0	9.942	30.43	6 12.71	15 47.04	1 7.43	8 2 49.97
23	8 13 1.00	2.03	19 56 29.5	26.3	9.919	31.27	6 14.47	15 47.12	1 7.35	8 6 46.53
24	8 16 58.76	59.80	19 43 48.7	45.4	9.895	32.10	6 15.68	15 47.21	1 7.27	8 10 43.09
25	8 20 55.95	56.98	19 30 48.4	44.9	9.871	32.92	6 16.30	15 47.30	1 7.19	8 14 39.65
26	8 24 52.57	53.60	+19 17 28.3	24.8	9.847	-33.73	+6 16.36	15 47.40	1 7.10	8 18 36.20
27	8 28 48.59	49.62	19 3 49.1	45.5	9.822	34.52	6 15.84	15 47.51	1 7.02	8 22 32.76
28	8 32 44.02	45.04	18 49 50.8	47.3	9.797	35.31	6 14.71	15 47.62	1 6.93	8 26 29.32
29	8 36 38.86	39.87	18 35 34.1	30.5	9.772	36.08	6 12.98	15 47.74	1 6.84	8 30 25.87
30	8 40 33.08	34.09	18 20 59.0	55.3	9.747	36.84	6 10.64	15 47.86	1 6.76	8 34 22.43
31	8 44 26.71	27.71	+18 6 5.7	2.0	9.722	-37.59	+6 7.71	15 47.98	1 6.67	8 38 18.99
Aug. 1	8 48 19.70	20.67	17 50 55.0	51.2	9.696	38.31	6 4.13	15 48.11	1 6.59	8 42 15.54
2	8 52 12.08	13.04	17 36 26.7	22.8	9.671	39.03	5 59.96	15 48.24	1 6.50	8 46 12.10
3	8 56 3.85	4.79	17 19 41.3	37.3	9.645	39.74	5 55.16	15 48.38	1 6.42	8 50 8.66
4	8 59 54.99	55.92	17 3 39.0	35.1	9.619	40.43	5 49.75	15 48.53	1 6.33	8 54 5.21
5	9 3 45.52	46.43	+16 47 20.4	16.6	9.593	-41.11	+5 43.71	15 48.68	1 6.24	8 58 1.77
6	9 7 35.43	36.33	16 30 45.6	41.8	9.567	41.78	5 37.09	15 48.83	1 6.15	9 1 58.33
7	9 11 24.74	25.62	16 13 54.9	51.1	9.542	42.44	5 29.84	15 48.98	1 6.07	9 5 54.88
8	9 15 13.46	14.31	15 56 48.5	44.7	9.517	43.08	5 21.99	15 49.14	1 5.99	9 9 51.44
9	9 19 1.56	2.40	15 39 27.0	23.2	9.493	43.71	5 13.54	15 49.31	1 5.90	9 13 47.99
10	9 22 49.10	49.89	+15 21 50.5	46.8	9.469	-44.33	+5 4.52	15 49.47	1 5.82	9 17 44.55
11	9 26 36.05	36.82	15 3 59.1	55.5	9.445	44.94	4 54.92	15 49.64	1 5.74	9 21 41.10
12	9 30 22.44	23.19	14 45 53.4	49.8	9.422	45.53	4 44.75	15 49.81	1 5.66	9 25 37.66
13	9 34 8.28	8.99	14 27 33.7	30.2	9.399	46.11	4 34.03	15 49.98	1 5.58	9 29 34.22
14	9 37 53.57	54.26	14 8 59.9	56.5	9.376	46.68	4 22.78	15 50.16	1 5.50	9 33 30.77
15	9 41 38.35	39.00	+13 50 12.7	9.5	9.354	-47.24	+4 11.00	15 50.33	1 5.43	9 37 27.33
16	9 45 22.61	23.23	+13 31 12.1	9.0	9.333	-47.79	+3 58.70	15 50.51	1 5.35	9 41 23.88

NOTE.—For mean time interval of semidiameter passing meridian subtract 0.19 from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ' "	"	s	"	m s	' "	m s	h m s
Aug. 16	9 45 22.61	23.23	+13 31 12.1	9.0	9.333	-47.79	+ 3 58.70	15 50.51	I 5.35	9 41 23.88
17	9 49 6.37	6.95	13 11 58.7	55.7	9.313	48.32	3 45.90	15 50.69	I 5.28	9 45 20.44
18	9 52 49.64	50.20	12 52 32.5	29.6	9.293	48.84	3 32.62	15 50.88	I 5.21	9 49 16.99
19	9 56 32.44	32.95	12 32 54.0	51.2	9.274	49.35	3 18.86	15 51.06	I 5.14	9 53 13.55
20	10 0 14.77	15.25	12 13 3.3	0.7	9.255	49.85	3 4.64	15 51.25	I 5.07	9 57 10.10
21	10 3 56.66	57.10	+11 52 60.9	58.5	9.236	-50.34	+ 2 49.98	15 51.44	I 5.00	10 1 6.66
22	10 7 38.11	38.51	11 32 47.1	44.9	9.218	50.80	2 34.88	15 51.64	I 4.93	10 5 3.21
23	10 11 19.14	19.50	11 12 22.2	20.2	9.201	51.25	2 19.35	15 51.84	I 4.87	10 8 59.77
24	10 14 59.76	60.08	10 51 46.6	44.8	9.184	51.69	2 3.41	15 52.04	I 4.81	10 12 56.32
25	10 18 39.97	40.25	10 30 60.5	58.9	9.168	52.13	1 47.08	15 52.25	I 4.75	10 16 52.87
26	10 22 19.80	20.03	+10 10 4.2	3.0	9.152	-52.54	+ 1 30.35	15 52.47	I 4.69	10 20 49.43
27	10 25 59.24	59.43	9 48 58.4	57.3	9.136	52.94	1 13.25	15 52.69	I 4.63	10 24 45.98
28	10 29 38.33	38.47	9 27 43.1	42.3	9.121	53.33	0 55.78	15 52.91	I 4.58	10 28 42.54
29	10 33 17.03	17.15	9 6 18.8	18.2	9.107	53.69	0 37.96	15 53.13	I 4.53	10 32 39.09
30	10 36 55.44	55.49	8 44 45.8	45.5	9.093	54.04	0 19.80	15 53.36	I 4.48	10 36 35.64
31	10 40 33.50	33.51	+8 23 4.4	4.4	9.079	-54.38	+ 0 1.31	15 53.59	I 4.43	10 40 32.20
Sept. 1	10 44 11.24	11.20	8 1 15.1	15.4	9.066	54.72	- 0 17.49	15 53.82	I 4.39	10 44 28.75
2	10 47 48.70	48.61	7 39 18.1	18.8	9.054	55.03	0 36.60	15 54.06	I 4.35	10 48 25.31
3	10 51 25.87	25.73	7 17 13.8	14.8	9.043	55.32	0 55.98	15 54.30	I 4.31	10 52 21.86
4	10 55 2.76	2.57	6 55 2.6	3.8	9.032	55.60	1 15.64	15 54.55	I 4.27	10 56 18.42
5	10 58 39.41	39.18	+6 32 44.6	46.0	9.022	-55.87	- 1 35.54	15 54.79	I 4.24	11 0 14.97
6	11 2 15.83	15.54	6 10 20.2	22.1	9.013	56.13	1 55.67	15 55.04	I 4.21	11 4 11.52
7	11 5 52.04	51.70	5 47 49.8	52.0	9.004	56.38	2 16.00	15 55.29	I 4.19	11 8 8.08
8	11 9 28.06	27.67	5 25 13.8	16.4	8.997	56.62	2 36.53	15 55.54	I 4.17	11 12 4.63
9	11 13 3.90	3.46	5 2 32.4	35.2	8.991	56.85	2 57.23	15 55.79	I 4.15	11 16 1.18
10	11 16 39.61	39.11	+4 39 45.7	48.9	8.985	-57.04	- 3 18.07	15 56.05	I 4.13	11 19 57.74
11	11 20 15.19	14.64	4 16 54.3	57.8	8.980	57.24	3 39.04	15 56.30	I 4.11	11 23 54.29
12	11 23 50.67	50.07	3 53 58.2	62.2	8.976	57.42	4 0.12	15 56.55	I 4.10	11 27 50.85
13	11 27 26.08	25.43	3 30 58.0	62.2	8.974	57.59	4 21.26	15 56.81	I 4.09	11 31 47.40
14	11 31 1.42	0.72	3 7 53.9	58.5	8.972	57.75	4 42.46	15 57.06	I 4.08	11 35 43.95
15	11 34 36.73	35.98	+2 44 46.1	51.1	8.971	-57.89	- 5 3.69	15 57.32	I 4.07	11 39 40.50
16	11 38 12.04	11.23	2 21 35.2	40.4	8.971	58.02	5 24.94	15 57.58	I 4.07	11 43 37.06
17	11 41 47.36	46.50	1 58 21.2	26.7	8.972	58.13	5 46.16	15 57.83	I 4.07	11 47 33.61
18	11 45 22.72	21.81	1 35 4.5	10.4	8.974	58.24	6 7.35	15 58.09	I 4.07	11 51 30.17
19	11 48 58.12	57.17	1 11 45.5	51.9	8.977	58.33	6 28.50	15 58.35	I 4.08	11 55 26.72
20	11 52 33.60	32.60	+0 48 24.6	31.3	8.980	-58.40	- 6 49.56	15 58.61	I 4.09	11 59 23.27
21	11 56 9.19	8.13	0 25 2.1	9.1	8.985	58.46	7 10.53	15 58.88	I 4.10	12 3 19.82
22	11 59 44.89	43.76	+0 1 38.3	45.7	8.990	58.51	7 31.38	15 59.14	I 4.11	12 7 16.38
23	12 3 20.71	19.53	-0 21 46.3	38.6	8.996	58.53	7 52.11	15 59.41	I 4.13	12 11 12.93
24	12 6 56.69	55.46	0 45 11.5	3.4	9.002	58.54	8 12.68	15 59.68	I 4.16	12 15 9.48
25	12 10 32.84	31.55	-1 8 36.8	28.5	9.010	-58.55	- 8 33.08	15 59.95	I 4.19	12 19 6.04
26	12 14 9.16	7.84	1 32 2.0	53.2	9.018	58.53	8 53.30	16 0.23	I 4.22	12 23 2.59
27	12 17 45.69	44.31	1 55 26.4	17.5	9.027	58.50	9 13.31	16 0.50	I 4.25	12 26 59.14
28	12 21 22.45	21.01	2 18 49.9	40.6	9.036	58.45	9 33.12	16 0.78	I 4.28	12 30 55.70
29	12 24 59.43	57.94	2 42 12.1	2.5	9.046	58.38	9 52.69	16 1.06	I 4.32	12 34 52.25
30	12 28 36.67	35.14	-3 5 32.5	22.6	9.057	-58.30	-10 11.99	16 1.34	I 4.36	12 38 48.80
31	12 32 14.18	12.60	-3 28 50.9	40.6	9.068	-58.21	-10 31.03	16 1.62	I 4.40	12 42 45.36

NOTE.—For mean time interval of semidiameter passing meridian, subtract 0.18 from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ' "	"	s	"	m s	' "	m s	h m s
Oct. 1	12 32 14.18	12.60	- 3 28 50.9	40.6	9.068	-58.21	-10 31.03	16 1.62	1 4.40	12 42 45.36
2	12 35 51.98	50.36	3 51 66.8	56.3	9.081	58.10	10 49.79	16 1.90	1 4.45	12 46 41.91
3	12 39 30.09	28.40	4 15 19.9	9.1	9.095	57.98	11 8.23	16 2.18	1 4.50	12 50 38.46
4	12 43 8.53	6.80	4 38 29.8	18.8	9.109	57.84	11 26.35	16 2.47	1 4.55	12 54 35.02
5	12 46 47.31	45.53	5 1 36.2	24.8	9.123	57.68	11 44.11	16 2.75	1 4.60	12 58 31.57
6	12 50 26.47	24.63	- 5 24 38.7	27.2	9.139	-57.51	-12 1.52	16 3.03	1 4.66	13 2 28.12
7	12 54 5.99	4.11	5 47 37.0	25.2	9.156	57.33	12 18.54	16 3.31	1 4.72	13 6 24.68
8	12 57 45.95	44.02	6 10 30.8	18.8	9.174	57.14	12 35.13	16 3.59	1 4.78	13 10 21.23
9	13 1 26.34	24.36	6 33 19.8	7.6	9.192	56.92	12 51.31	16 3.87	1 4.85	13 14 17.78
10	13 5 7.18	5.16	6 55 63.2	50.8	9.212	56.70	13 7.02	16 4.15	1 4.92	13 18 14.34
11	13 8 48.50	46.44	- 7 18 41.2	28.6	9.232	-56.46	-13 22.26	16 4.43	1 4.99	13 22 10.89
12	13 12 30.32	28.21	7 41 13.3	0.6	9.253	56.20	13 36.99	16 4.70	1 5.07	13 26 7.45
13	13 16 12.67	10.52	8 3 39.0	26.1	9.275	55.93	13 51.21	16 4.97	1 5.15	13 30 4.00
14	13 19 55.56	53.36	8 25 58.2	45.1	9.299	55.65	14 4.87	16 5.24	1 5.23	13 34 0.55
15	13 23 39.01	36.77	8 47 70.3	57.1	9.323	55.36	14 17.97	16 5.51	1 5.31	13 37 57.11
16	13 27 23.06	20.79	- 9 10 15.0	1.7	9.348	-55.04	-14 30.48	16 5.78	1 5.39	13 41 53.66
17	13 31 7.71	5.41	9 31 71.8	58.4	9.373	54.70	14 42.40	16 6.04	1 5.48	13 45 50.22
18	13 34 52.98	50.64	9 53 60.5	47.1	9.400	54.35	14 53.68	16 6.31	1 5.57	13 49 46.77
19	13 38 38.90	36.53	10 15 40.8	27.2	9.427	53.99	15 4.31	16 6.57	1 5.66	13 53 43.32
20	13 42 25.48	23.08	10 36 72.0	58.4	9.455	53.61	15 14.30	16 6.83	1 5.75	13 57 39.88
21	13 46 12.74	10.31	-10 58 33.8	20.1	9.483	-53.20	-15 23.61	16 7.09	1 5.85	14 1 36.43
22	13 49 60.67	58.21	11 19 45.8	32.2	9.512	52.79	15 32.23	16 7.35	1 5.95	14 5 32.99
23	13 53 49.31	46.81	11 40 47.7	34.0	9.541	52.36	15 40.16	16 7.61	1 6.05	14 9 29.54
24	13 57 38.66	36.15	12 1 38.8	25.2	9.571	51.90	15 47.36	16 7.88	1 6.15	14 13 26.09
25	14 1 28.74	26.19	12 22 18.9	5.3	9.601	51.43	15 53.85	16 8.14	1 6.26	14 17 22.65
26	14 5 19.53	16.97	-12 42 47.6	34.0	9.631	-50.95	-15 59.61	16 8.40	1 6.36	14 21 19.20
27	14 9 11.07	8.49	13 2 64.3	50.7	9.662	50.44	16 4.63	16 8.66	1 6.47	14 25 15.76
28	14 13 3.36	0.76	13 22 68.6	55.2	9.694	49.92	16 8.91	16 8.92	1 6.58	14 29 12.31
29	14 16 56.40	53.78	13 42 60.4	47.0	9.726	49.39	16 12.43	16 9.17	1 6.69	14 33 8.87
30	14 20 50.22	47.58	14 2 38.8	25.5	9.758	48.83	16 15.19	16 9.43	1 6.80	14 37 5.42
31	14 24 44.80	42.14	-14 21 63.8	50.6	9.791	-48.25	-16 17.17	16 9.69	1 6.91	14 41 1.98
Nov. 1	14 28 40.16	37.49	14 41 14.7	1.8	9.823	47.66	16 18.38	16 9.94	1 7.03	14 44 58.54
2	14 32 36.30	33.62	14 59 71.2	58.4	9.856	47.05	16 18.80	16 10.20	1 7.14	14 48 55.09
3	14 36 33.24	30.55	15 18 53.0	40.4	9.889	46.43	16 18.42	16 10.45	1 7.26	14 52 51.64
4	14 40 30.98	28.28	15 37 19.6	7.2	9.922	45.79	16 17.25	16 10.70	1 7.38	14 56 48.20
5	14 44 29.53	26.83	-15 55 30.7	18.5	9.956	-45.13	-16 15.26	16 10.94	1 7.50	15 0 44.76
6	14 48 28.90	26.20	16 13 25.8	13.9	9.990	44.46	16 12.45	16 11.18	1 7.62	15 4 41.31
7	14 52 29.09	26.39	16 30 64.6	52.9	10.025	43.77	16 8.82	16 11.42	1 7.74	15 8 37.87
8	14 56 30.12	27.42	16 48 26.7	15.2	10.060	43.07	16 4.36	16 11.65	1 7.86	15 12 34.42
9	15 0 31.99	29.30	17 5 31.7	20.3	10.095	42.35	15 59.05	16 11.88	1 7.97	15 16 30.98
10	15 4 34.70	32.02	-17 22 19.2	8.2	10.131	-41.61	-15 52.91	16 12.11	1 8.09	15 20 27.54
11	15 8 38.26	35.59	17 38 48.7	38.0	10.166	40.86	15 45.91	16 12.33	1 8.21	15 24 24.09
12	15 12 42.69	40.03	17 54 60.1	49.6	10.202	40.09	15 38.04	16 12.54	1 8.33	15 28 20.65
13	15 16 47.97	45.33	18 10 52.8	42.8	10.238	39.30	15 29.33	16 12.75	1 8.45	15 32 17.20
14	15 20 54.13	51.50	18 26 26.5	16.7	10.274	38.50	15 19.74	16 12.96	1 8.57	15 36 13.76
15	15 24 61.13	58.52	-18 41 40.8	31.3	10.310	-37.69	-15 9.30	16 13.16	1 8.68	15 40 10.32
16	15 29 9.00	6.42	18 56 35.1	26.0	10.346	-36.85	-14 58.00	16 13.36	1 8.80	15 44 6.88

NOTE.—For mean time interval of semidiameter passing meridian subtract 0.18 from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ' "	"	s	"	m s	' "	m s	h m s
Nov. 16	15 29 9.00	6.42	-18 56 35.1	26.0	10.346	-36.85	-14 58.00	16 13.36	I 8.80	15 44 6.88
17	15 33 17.72	15.16	19 11 9.4	0.5	10.381	36.00	14 45.83	16 13.56	I 8.91	15 48 3.43
18	15 37 27.30	24.76	19 25 23.0	14.4	10.416	35.14	14 32.83	16 13.76	I 9.02	15 51 59.99
19	15 41 37.71	35.21	19 39 15.5	7.4	10.451	34.25	14 18.97	16 13.95	I 9.13	15 55 56.54
20	15 45 48.95	46.49	19 52 46.7	39.0	10.485	33.35	14 4.30	16 14.14	I 9.24	15 59 53.10
21	15 49 61.03	58.60	-20 5 56.2	48.7	10.519	-32.44	-13 48.78	16 14.32	I 9.35	16 3 49.66
22	15 54 13.90	11.52	20 18 43.5	36.4	10.553	31.50	13 32.49	16 14.51	I 9.46	16 7 46.22
23	15 58 27.56	25.23	20 31 8.3	1.6	10.586	30.56	13 15.38	16 14.69	I 9.57	16 11 42.77
24	16 2 42.01	39.71	20 43 10.3	4.0	10.617	29.60	12 57.49	16 14.87	I 9.67	16 15 39.33
25	16 6 57.20	54.96	20 54 49.0	43.1	10.648	28.63	12 38.86	16 15.04	I 9.77	16 19 35.89
26	16 11 13.12	10.93	-21 5 64.2	58.6	10.678	-27.64	-12 19.50	16 15.21	I 9.87	16 23 32.45
27	16 15 29.77	27.63	21 16 55.6	50.3	10.708	26.64	11 59.40	16 15.38	I 9.97	16 27 29.00
28	16 19 47.11	45.02	21 27 22.7	17.8	10.736	25.63	11 38.63	16 15.55	I 10.07	16 31 25.56
29	16 24 5.12	3.09	21 37 25.3	20.8	10.763	24.59	11 17.17	16 15.71	I 10.16	16 35 22.12
30	16 28 23.77	21.81	21 46 63.1	58.9	10.790	23.55	10 55.08	16 15.87	I 10.25	16 39 18.68
Dec. 1	16 32 43.06	41.16	-21 56 16.0	12.0	10.816	-22.51	-10 32.34	16 16.03	I 10.34	16 43 15.23
2	16 37 2.96	1.12	22 4 63.4	59.6	10.841	21.45	10 9.01	16 16.18	I 10.43	16 47 11.79
3	16 41 23.43	21.66	22 13 25.3	21.9	10.865	20.37	9 45.09	16 16.33	I 10.51	16 51 8.35
4	16 45 44.46	42.76	22 21 21.4	18.4	10.888	19.29	9 20.62	16 16.47	I 10.58	16 55 4.91
5	16 50 6.03	4.39	22 28 51.3	48.7	10.909	18.20	8 55.60	16 16.61	I 10.65	16 59 1.47
6	16 54 28.11	26.56	-22 35 55.1	52.6	10.930	-17.10	-8 30.07	16 16.74	I 10.72	17 2 58.03
7	16 58 50.69	49.21	22 42 32.1	30.0	10.950	16.00	8 4.04	16 16.87	I 10.79	17 6 54.58
8	17 3 13.72	12.33	22 48 42.7	40.7	10.969	14.89	7 37.55	16 16.99	I 10.85	17 10 51.14
9	17 7 37.21	35.89	22 54 26.1	24.5	10.988	13.76	7 10.62	16 17.10	I 10.91	17 14 47.70
10	17 11 61.12	59.89	22 59 42.5	41.1	11.004	12.62	6 43.27	16 17.21	I 10.97	17 18 44.26
11	17 16 25.42	24.27	-23 4 31.7	30.5	11.020	-11.48	-6 15.52	16 17.31	I 11.02	17 22 40.82
12	17 20 50.08	49.01	23 8 53.4	52.4	11.035	10.33	5 47.41	16 17.41	I 11.06	17 26 37.37
13	17 25 15.09	14.11	23 12 47.6	46.6	11.049	9.18	5 18.96	16 17.50	I 11.10	17 30 33.93
14	17 29 40.41	39.51	23 16 13.8	13.2	11.062	8.02	4 50.19	16 17.59	I 11.14	17 34 30.49
15	17 34 6.00	5.19	23 19 12.4	11.9	11.073	6.86	4 21.13	16 17.67	I 11.17	17 38 27.05
16	17 38 31.85	31.14	-23 21 42.9	42.5	11.082	-5.70	-3 51.84	16 17.74	I 11.20	17 42 23.61
17	17 42 57.92	57.30	23 23 45.4	45.1	11.090	4.52	3 22.32	16 17.81	I 11.22	17 46 20.17
18	17 47 24.16	23.62	23 25 19.7	19.5	11.096	3.34	2 52.62	16 17.87	I 11.24	17 50 16.73
19	17 51 50.56	50.12	23 26 25.7	25.6	11.102	2.17	2 22.78	16 17.93	I 11.25	17 54 13.28
20	17 56 17.05	16.71	23 27 3.4	3.3	11.106	-0.99	1 52.82	16 17.99	I 11.26	17 58 9.84
21	18 0 43.64	43.37	-23 27 12.9	12.9	11.109	+0.19	-1 22.79	16 18.04	I 11.27	18 2 6.40
22	18 5 10.24	10.08	23 26 54.0	54.0	11.109	1.37	0 52.74	16 18.09	I 11.27	18 6 2.96
23	18 9 36.85	36.78	23 26 6.8	6.8	11.108	2.55	-0 22.68	16 18.14	I 11.27	18 9 59.52
24	18 14 3.42	3.44	23 24 51.2	51.2	11.105	3.73	+0 7.34	16 18.18	I 11.26	18 13 56.08
25	18 18 29.88	30.00	23 23 7.5	7.4	11.101	4.91	0 37.27	16 18.22	I 11.25	18 17 52.64
26	18 22 56.24	56.45	-23 20 55.4	55.3	11.095	+6.08	+1 7.07	16 18.26	I 11.23	18 21 49.19
27	18 27 22.45	22.75	23 18 15.3	15.1	11.087	7.25	1 36.73	16 18.29	I 11.21	18 25 45.75
28	18 31 48.45	48.84	23 15 7.1	6.8	11.078	8.42	2 6.18	16 18.31	I 11.18	18 29 42.31
29	18 36 14.22	14.71	23 11 30.9	30.5	11.068	9.58	2 35.41	16 18.33	I 11.15	18 33 38.87
30	18 40 39.74	40.30	23 7 26.9	26.4	11.057	10.74	3 4.36	16 18.35	I 11.11	18 37 35.43
31	18 45 4.94	5.59	-23 2 55.3	54.6	11.045	+11.89	+3 33.03	16 18.36	I 11.07	18 41 31.99
32	18 49 29.82	30.56	-22 57 56.1	55.2	11.032	+13.03	+4 1.37	16 18.37	I 11.03	18 45 28.55

NOTE.—For mean time interval of semidiameter passing meridian, subtract 0.19 from the sidereal interval.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ' "	"	s	' "	' "	
Jan. 1	23 33.51	2.577	18 23 48.72	164.90	-26 42 7.3	+245.1	75.61	16 8.8	59 9.0	II. N.
3	0 33.44	2.405	19 27 50.83	154.55	-24 11 25.1	498.2	73.09	15 58.9	58 33.1	I. N.
4	1 28.64	2.193	20 27 8.52	141.82	-20 12 41.5	683.4	69.93	15 47.1	57 49.5	I. S.
5	2 18.84	1.995	21 21 25.25	129.89	-15 13 48.4	800.4	66.88	15 34.3	57 2.3	I. S.
6	3 4.75	1.839	22 11 23.93	120.50	-9 39 59.8	860.4	64.41	15 21.6	56 15.6	I. S.
7	3 47.53	1.735	22 58 14.34	114.23	-3 51 11.4	+877.4	62.72	15 9.9	55 32.9	I. S.
8	4 28.45	1.684	23 43 12.84	111.16	+1 57 41.2	862.2	61.92	15 0.4	54 57.6	I. S.
9	5 8.75	1.682	0 27 33.81	111.08	7 35 9.7	821.1	61.93	14 53.3	54 31.6	I. S.
10	5 49.58	1.728	1 12 26.99	113.80	12 51 25.5	756.2	62.72	14 49.1	54 16.4	I. S.
11	6 32.00	1.814	1 58 55.87	118.98	17 36 41.6	665.6	64.17	14 48.0	54 12.3	I. S.
12	7 16.91	1.932	2 47 53.95	126.10	+21 39 58.1	+545.3	66.07	14 49.9	54 19.3	I. S.
13	8 4.87	2.066	3 39 56.31	134.13	24 48 23.8	390.8	68.15	14 54.6	54 36.6	I. S.
14	8 55.97	2.188	4 35 7.30	141.52	26 47 49.2	+200.6	69.99	15 1.7	55 2.6	I. S.
15	9 49.59	2.270	5 32 49.67	146.45	27 24 53.3	-19.2	71.17	15 10.6	55 35.4	I. N.
16	10 44.45	2.290	6 31 46.73	147.62	26 30 32.1	-253.2	71.40	15 20.7	56 12.2	I. N.
17	11 39.00	2.247	7 30 25.17	145.02	+24 3 18.1	-479.8	70.71	15 31.0	56 50.3	I. N.
18	12 31.97	2.164	8 27 29.04	140.04	20 10 26.9	-678.3	69.44	15 41.0	57 27.1	II. N. S.
19	13 22.80	2.073	9 22 23.70	134.59	15 6 22.3	-834.2	68.06	15 49.9	57 59.5	II. S.
20	14 11.65	2.003	10 15 19.29	130.37	9 9 43.8	-940.4	66.98	15 57.2	58 26.4	II. S.
21	14 59.27	1.973	11 7 0.50	128.53	+2 40 56.5	-994.4	66.55	16 2.8	58 47.0	II. S.
22	15 46.73	1.992	11 58 32.93	129.70	-3 59 2.7	-996.3	66.93	16 6.7	59 1.2	II. S.
23	16 35.31	2.065	12 51 12.09	134.09	-10 28 53.5	-943.7	68.14	16 9.0	59 9.7	II. S.
24	17 26.23	2.186	13 46 12.35	141.35	-16 26 19.4	-833.6	70.06	16 9.9	59 12.9	II. S.
25	18 20.46	2.336	14 44 31.49	150.38	-21 27 41.0	-663.0	72.34	16 9.4	59 11.3	II. S.
26	19 18.28	2.477	15 46 26.88	158.90	-25 8 50.6	-433.7	74.42	16 7.8	59 5.2	II. S.
27	20 18.90	2.560	16 51 10.36	163.86	-27 8 44.6	-160.5	75.55	16 4.6	58 53.7	II. S.
28	21 20.35	2.543	17 56 44.19	162.87	-27 15 20.1	+126.7	75.24	15 59.9	58 36.5	II. N.
29	22 20.18	2.428	19 0 40.03	155.93	-25 30 32.6	390.6	73.49	15 53.6	58 13.2	II. N.
30	23 16.42	2.254	20 1 0.58	145.44	-22 9 53.9	602.6	70.83	15 45.7	57 44.2	II. N.
Feb. 1	0 8.27	2.069	20 56 56.38	134.33	-17 36 48.4	752.3	67.95	15 36.5	57 10.4	II. N.
2	0 55.93	1.909	21 48 40.49	124.72	-12 15 59.8	+842.5	65.40	15 26.6	56 33.9	I. S.
3	1 40.25	1.792	22 37 3.31	117.64	-6 29 25.9	882.8	63.50	15 16.5	55 56.9	I. S.
4	2 22.31	1.722	23 23 10.35	113.43	-0 35 1.7	883.3	62.37	15 7.0	55 22.0	I. S.
5	3 3.25	1.698	0 8 9.98	112.02	+5 12 58.8	851.9	62.04	14 58.8	54 52.0	I. S.
6	3 44.16	1.719	0 53 8.13	113.27	10 42 52.3	793.3	62.47	14 52.6	54 29.2	I. S.
7	4 26.07	1.780	1 39 6.05	116.94	+15 44 10.5	+708.9	63.57	14 48.9	54 15.5	I. S.
8	5 9.87	1.875	2 26 57.72	122.66	20 6 25.0	597.5	65.19	14 48.0	54 12.1	I. S.
9	5 56.24	1.992	3 17 24.36	129.71	23 38 15.0	456.4	67.11	14 50.1	54 19.9	I. S.
10	6 45.51	2.113	4 10 45.37	136.96	26 7 14.4	283.2	69.00	14 55.3	54 39.0	I. S.
11	7 37.47	2.211	5 6 47.92	142.91	27 20 46.1	+79.8	70.49	15 3.4	55 8.7	I. S.
12	8 31.30	2.265	6 4 42.74	146.11	+27 8 13.6	-145.0	71.24	15 13.9	55 47.4	I. N.
13	9 25.73	2.262	7 3 14.38	145.96	25 23 58.5	-375.6	71.13	15 26.2	56 32.6	I. N.
14	10 19.51	2.213	8 1 6.38	143.01	22 9 31.8	-592.8	70.30	15 39.3	57 20.7	I. N.
15	11 11.78	2.142	8 57 28.06	138.72	17 34 1.7	-778.3	69.15	15 52.1	58 7.8	I. N.
16	12 2.37	2.077	9 52 8.04	134.79	+11 52 55.6	-918.8	68.10	16 3.6	58 49.8	I. N. S.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi- diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ' "	"	s	' "	' "	
Feb. 16	12 2.37	2.077	9 52 8.04	134.79	+11 52 55.6	-918.8	68.10	16 3.6	58 49.8	I. N. S.
17	12 51.69	2.040	10 45 32.17	132.59	+ 5 26 7.8	-1005.6	67.53	16 12.5	59 22.7	II. S.
18	13 40.62	2.046	11 38 32.65	132.93	- 1 23 37.1	-1032.9	67.65	16 18.4	59 44.1	II. S.
19	14 30.27	2.100	12 32 15.08	136.17	- 8 11 48.2	-997.3	68.56	16 20.7	59 52.9	II. S.
20	15 21.76	2.198	13 27 50.61	142.11	-14 32 51.3	-897.0	70.16	16 19.9	59 49.9	II. S.
21	16 16.02	2.326	14 26 11.58	149.78	-20 0 51.8	-732.5	72.16	16 16.4	59 36.9	II. S.
22	17 13.38	2.450	15 27 39.27	157.26	-24 11 0.7	-509.5	74.05	16 10.9	59 16.6	II. S.
23	18 13.24	2.526	16 31 37.33	161.86	-26 42 39.3	-243.7	75.18	16 4.0	58 51.4	II. S.
24	19 13.97	2.518	17 36 27.52	161.37	-27 23 49.8	+ 37.6	75.04	15 56.4	58 23.5	II. S.
25	20 13.39	2.420	18 39 59.26	155.47	-26 14 56.3	301.4	73.54	15 48.4	57 54.1	II. N.
26	21 9.67	2.263	19 40 21.64	146.00	-23 28 27.2	+ 522.3	71.11	15 40.2	57 24.0	II. N.
27	22 1.89	2.089	20 36 40.06	135.56	-19 24 28.0	688.2	68.35	15 32.0	56 53.7	II. N.
28	22 50.11	1.934	21 28 57.64	126.21	-14 25 14.7	799.1	65.81	15 23.7	56 23.3	II. N.
Mar. 1	23 35.01	1.814	22 17 55.22	119.02	- 8 51 39.0	861.3	63.82	15 15.5	55 53.4	II. N.
3	0 17.54	1.738	23 4 31.13	114.43	- 3 1 45.6	881.8	62.52	15 7.7	55 24.6	I. S.
4	0 58.78	1.705	23 49 48.29	112.44	+ 2 49 7.4	+ 867.1	61.98	15 0.5	54 58.2	I. S.
5	1 39.72	1.713	0 34 48.12	112.94	8 27 49.4	821.5	62.17	14 54.3	54 35.4	I. S.
6	2 21.32	1.759	1 20 27.72	115.71	13 42 30.4	747.2	63.01	14 49.6	54 18.0	I. S.
7	3 4.42	1.837	2 7 37.41	120.38	18 21 52.3	644.9	64.38	14 46.8	54 7.9	I. S.
8	3 49.68	1.937	2 56 56.62	126.39	22 14 33.5	513.6	66.08	14 46.4	54 6.4	I. S.
9	4 37.45	2.044	3 48 47.36	132.82	+25 8 55.5	+ 353.3	67.87	14 48.7	54 14.8	I. S.
10	5 27.68	2.139	4 43 6.34	138.52	26 53 30.6	+ 165.4	69.39	14 53.9	54 33.9	I. S.
11	6 19.83	2.200	5 39 20.45	142.24	27 18 20.3	- 44.1	70.36	15 2.1	55 4.1	I. S.
12	7 12.94	2.218	6 36 32.28	143.27	26 16 51.2	-264.0	70.59	15 13.1	55 44.4	I. N.
13	8 5.94	2.193	7 33 37.46	141.79	23 47 37.1	-480.3	70.16	15 26.5	56 33.5	I. N.
14	8 58.01	2.144	8 29 46.70	138.84	+19 55 3.3	- 678.2	69.33	15 41.4	57 28.4	I. N.
15	9 48.84	2.094	9 24 41.33	135.83	14 49 10.2	- 844.9	68.47	15 56.8	58 25.0	I. N.
16	10 38.68	2.065	10 18 36.50	134.08	8 44 53.0	-968.5	67.96	16 11.3	59 18.2	I. N.
17	11 28.25	2.073	11 12 15.33	134.60	+ 2 1 34.1	-1038.2	68.05	16 23.3	60 2.4	I. N. S.
18	12 18.57	2.128	12 6 39.15	137.89	- 4 57 9.6	-1044.0	68.90	16 31.6	60 32.7	II. S.
19	13 10.76	2.229	13 2 55.95	143.94	-11 43 50.6	-976.9	70.47	16 35.2	60 46.0	II. S.
20	14 5.81	2.362	14 2 4.41	151.96	-17 48 21.2	-832.9	72.53	16 33.9	60 41.3	II. S.
21	15 4.15	2.496	15 4 30.92	160.03	-22 40 25.1	-616.3	74.57	16 28.3	60 20.5	II. S.
22	16 5.24	2.583	16 9 43.17	165.27	-25 54 3.8	-345.2	75.91	16 19.3	59 47.4	II. S.
23	17 7.41	2.580	17 15 59.78	165.08	-27 13 29.2	- 51.6	75.91	16 8.1	59 6.6	II. S.
24	18 8.29	2.478	18 20 59.16	158.97	-26 37 26.5	+ 226.2	74.45	15 56.2	58 22.5	II. N.
25	19 5.83	2.310	19 22 37.74	148.81	-24 18 34.6	459.1	71.93	15 44.2	57 38.6	II. N.
26	19 59.00	2.122	20 19 53.42	137.52	-20 37 49.1	635.1	68.99	15 32.9	56 57.3	II. N.
27	20 47.84	1.953	21 12 48.10	127.36	-15 57 52.2	756.0	66.25	15 22.7	56 19.8	II. N.
28	21 33.05	1.823	22 2 5.10	119.50	-10 39 20.5	829.4	64.04	15 13.7	55 46.5	II. N.
29	22 15.68	1.737	22 48 46.01	114.37	- 4 59 38.2	+ 863.0	62.54	15 5.8	55 17.5	II. N.
30	22 56.80	1.697	23 33 56.42	111.94	+ 0 46 33.8	862.6	61.80	14 59.0	54 52.7	II. N.
31	23 37.46	1.698	0 18 39.25	112.05	6 26 22.4	831.4	61.80	14 53.4	54 31.9	II. S.
Apr. 2	0 18.61	1.737	1 3 52.11	114.39	11 47 48.2	770.8	62.46	14 48.9	54 15.7	I. S.
3	1 1.11	1.808	1 50 25.13	118.65	+16 39 4.6	+ 680.6	63.67	14 45.9	54 4.4	I. S.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limb.
Apr. 3	h m	m	h m s	s	° ' "	"	s	' "	' "	I. S.
4	1 1.11	1.808	1 50 25.13	118.63	+16 39 4.6	+ 680.6	63.67	14 45.9	54 4.4	I. S.
5	1 45.58	1.901	2 38 57.34	124.21	20 48 14.7	560.2	65.25	14 44.4	53 59.0	I. S.
6	2 32.40	2.001	3 29 50.73	130.24	24 3 14.5	409.9	66.93	14 44.8	54 0.4	I. S.
7	3 21.53	2.090	4 23 3.40	135.61	26 12 31.5	232.3	68.42	14 47.4	54 10.0	I. S.
8	4 12.49	2.150	5 18 5.65	139.20	27 6 20.1	+ 34.0	69.42	14 52.5	54 28.6	I. S.
9	5 4.39	2.168	6 14 4.83	140.30	+26 38 18.2	- 174.9	69.76	15 0.2	54 57.1	I. N.
10	5 56.23	2.147	7 10 0.64	139.02	24 46 40.1	- 382.0	69.45	15 10.7	55 35.5	I. N.
11	6 47.23	2.101	8 5 5.37	136.24	21 34 32.7	- 575.6	68.72	15 23.6	56 23.1	I. N.
12	7 37.05	2.052	8 58 58.96	133.31	17 9 16.8	- 746.2	67.92	15 38.7	57 18.3	I. N.
13	8 25.88	2.022	9 51 53.36	131.50	11 41 40.1	- 885.9	67.38	15 54.9	58 17.9	I. N.
14	9 14.39	2.006	10 44 28.79	131.87	+ 5 25 47.9	- 985.9	67.41	16 11.1	59 17.3	I. N.
15	10 3.60	2.008	11 37 46.16	135.10	- 1 20 17.1	- 1034.8	68.20	16 25.7	60 11.0	I. N.
16	10 54.73	2.187	12 32 58.49	141.45	- 8 13 29.9	- 1029.1	69.79	16 36.9	60 52.4	I. N.
17	11 48.96	2.339	13 31 18.12	150.56	-14 45 3.9	- 944.6	72.07	16 43.4	61 16.2	I. S.
18	12 47.14	2.509	14 33 34.96	160.82	-20 21 36.9	- 743.6	74.60	16 44.2	61 19.0	II. S.
19	13 49.16	2.649	15 39 43.06	169.20	-24 29 26.4	- 484.1	76.64	16 39.2	61 0.7	II. S.
20	14 53.53	2.695	16 48 11.98	172.02	-26 42 25.6	- 176.5	77.37	16 29.5	60 24.9	II. S.
21	15 57.53	2.618	17 56 19.11	167.55	-26 50 42.1	+ 131.0	76.34	16 16.3	59 36.5	II. S.
22	16 58.39	2.442	19 1 17.26	156.76	-25 3 32.0	394.9	73.83	16 1.4	58 41.8	II. N.
23	17 54.43	2.226	20 1 25.32	143.80	-21 43 30.7	593.9	70.63	15 46.3	57 46.5	II. N.
24	18 45.37	2.085	20 56 26.89	131.66	-17 17 3.6	+ 728.4	67.46	15 32.2	56 54.4	II. N.
25	19 31.93	1.864	21 47 4.41	121.99	-12 7 54.5	809.4	64.83	15 19.5	56 8.0	II. N.
26	20 15.23	1.754	22 34 26.56	115.39	- 6 35 1.8	848.8	62.95	15 8.9	55 28.9	II. N.
27	20 56.53	1.695	23 19 47.53	111.86	- 0 53 17.2	854.9	61.88	15 0.2	54 56.9	II. N.
28	21 36.98	1.683	0 4 18.05	111.14	+ 4 45 4.3	832.4	61.61	14 53.4	54 32.2	II. N.
29	22 17.67	1.713	0 49 2.23	118.92	+10 8 55.5	+ 782.3	62.06	14 48.5	54 14.1	II. N.
30	22 59.50	1.778	1 34 55.82	116.85	15 7 11.9	704.1	63.11	14 45.2	54 1.9	II. N.
May 1	23 43.23	1.869	2 24 43.22	122.31	19 28 12.7	595.8	64.60	14 43.5	53 55.8	II. S.
2	0 29.30	1.971	3 12 51.89	128.44	22 59 39.8	456.2	66.26	14 43.4	53 55.4	I. S.
3	1 17.78	2.065	4 5 24.66	134.10	25 29 17.5	287.3	67.79	14 44.9	54 0.8	I. S.
4	2 8.19	2.130	4 59 54.41	138.00	+26 46 24.3	+ 95.2	68.86	14 48.1	54 12.6	I. S.
5	2 59.65	2.151	5 55 27.02	139.25	26 43 49.9	- 109.0	69.25	14 53.2	54 31.4	I. S.
6	3 51.06	2.127	6 50 56.56	137.83	25 19 26.1	- 311.6	68.95	15 0.4	54 57.9	I. N.
7	4 41.49	2.073	7 45 27.28	134.55	22 36 22.1	- 500.5	68.16	15 9.8	55 32.4	I. N.
8	5 30.48	2.010	8 38 30.96	130.80	18 42 0.0	- 667.0	67.21	15 21.4	56 15.0	I. N.
9	6 18.11	1.963	9 30 13.20	127.97	+13 46 25.3	- 805.9	66.46	15 35.0	57 4.8	I. N.
10	7 4.98	1.950	10 21 9.75	127.16	8 1 31.4	- 912.8	66.22	15 50.0	58 0.1	I. N.
11	7 52.07	1.983	11 12 19.37	129.17	+ 1 41 12.8	- 981.6	66.72	16 5.7	58 57.6	I. N.
12	8 40.61	2.072	12 4 56.77	134.54	- 4 57 20.6	- 1001.9	68.07	16 20.7	59 52.6	I. N.
13	9 31.99	2.218	13 0 24.46	143.32	-11 31 55.6	- 958.9	70.29	16 33.4	60 39.4	I. N.
14	10 27.46	2.420	13 59 58.21	154.84	-17 33 54.1	- 836.5	73.11	16 42.3	61 11.9	I. N.
15	11 27.69	2.606	15 4 18.23	166.63	-22 29 5.7	- 624.8	75.93	16 45.8	61 25.0	I. S.
16	12 32.06	2.742	16 12 47.60	174.81	-25 43 14.7	- 335.5	77.86	16 43.4	61 16.2	II. S.
17	13 38.26	2.750	17 23 7.09	175.33	-26 52 30.4	- 9.4	78.01	16 35.3	60 46.5	II. S.
18	14 42.94	2.619	18 31 55.12	167.42	-25 53 31.2	+ 296.4	76.22	16 22.8	60 0.5	II. S.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limb.
	h m	m	h m s	s	° ' "	"	s	"	"	
May 18	14 42.94	2.619	18 31 55.12	167.42	-25 53 31.2	+296.4	76.22	16 22.8	60 0.5	II. S.
19	15 43.28	2.401	19 36 21.91	154.29	-23 3 56.3	538.8	73.11	16 7.5	59 4.1	II. N.
20	16 38.06	2.167	20 35 14.46	140.23	-18 52 40.3	705.0	69.63	15 51.2	58 4.2	II. N.
21	17 27.57	1.966	21 28 49.38	128.16	-13 48 51.4	804.0	66.49	15 35.3	57 5.9	II. N.
22	18 12.88	1.819	22 18 12.09	119.30	- 8 16 16.5	851.7	64.09	15 20.9	56 13.1	II. N.
23	18 55.34	1.729	23 4 43.41	113.87	- 2 32 39.3	+861.2	62.56	15 8.7	55 28.2	II. N.
24	19 36.28	1.691	23 49 43.06	111.62	+ 3 8 42.9	841.8	61.88	14 58.9	54 52.3	II. N.
25	20 16.91	1.702	0 34 23.90	112.25	8 36 58.8	795.8	62.00	14 51.7	54 25.8	II. N.
26	20 58.29	1.753	1 19 50.17	115.33	13 42 2.8	725.0	62.81	14 46.9	54 8.2	II. N.
27	21 41.32	1.837	2 6 55.45	120.38	18 13 20.6	626.7	64.14	14 44.3	53 58.7	II. N.
28	22 26.62	1.940	2 56 17.67	126.58	+21 59 17.8	+497.9	65.77	14 43.7	53 56.6	II. N.
29	23 14.44	2.043	3 48 11.41	132.78	24 47 35.1	338.5	67.38	14 44.9	54 0.9	II. S.
31	0 4.50	2.123	4 42 19.84	137.57	26 26 30.3	+152.3	68.62	14 47.7	54 11.0	I. S.
June 1	0 55.98	2.159	5 37 53.47	139.73	26 47 8.4	- 50.7	69.19	14 51.9	54 26.4	I. S.
2	1 47.70	2.143	6 33 41.63	138.79	25 45 37.3	-255.9	68.99	14 57.5	54 47.1	I. S.
3	2 38.52	2.087	7 28 35.79	135.40	+23 24 10.5	-448.1	68.18	15 4.5	55 12.9	I. N.
4	3 27.71	2.012	8 21 51.99	130.88	19 50 19.4	-616.5	67.06	15 13.0	55 44.0	I. N.
5	4 15.14	1.943	9 13 21.79	126.78	15 14 58.4	-754.9	66.02	15 22.9	56 20.5	I. N.
6	5 1.21	1.903	10 3 30.52	124.33	9 50 39.3	-861.0	65.40	15 34.3	57 2.2	I. N.
7	5 46.79	1.904	10 53 9.48	124.42	+ 3 50 43.9	-932.5	65.45	15 46.8	57 48.2	I. N.
8	6 33.04	1.959	11 43 28.17	127.71	- 2 30 6.7	-964.5	66.33	16 0.0	58 36.5	I. N.
9	7 21.29	2.072	12 35 47.93	134.54	- 8 54 29.7	-948.3	68.08	16 12.9	59 24.2	I. N.
10	8 12.97	2.242	13 31 33.42	144.76	-15 0 26.5	-869.8	70.69	16 24.6	60 7.1	I. N.
11	9 9.23	2.450	14 31 55.14	157.23	-20 20 4.8	-714.5	73.73	16 33.6	60 40.1	I. N.
12	10 10.46	2.645	15 37 15.47	169.01	-24 20 52.6	-475.9	76.50	16 38.6	60 58.3	I. N.S.
13	11 15.53	2.757	16 46 26.71	175.71	-26 31 57.8	-171.4	78.03	16 38.5	60 58.1	I. S.
14	12 21.63	2.727	17 56 40.58	173.92	-26 35 18.1	+153.0	77.62	16 33.1	60 38.4	II. S.
15	13 25.36	2.566	19 4 31.20	164.22	-24 34 28.2	440.9	75.35	16 23.0	60 1.3	II. N.S.
16	14 24.27	2.338	20 7 31.90	150.55	-20 52 25.4	655.8	72.07	16 9.5	59 11.5	II. N.
17	15 17.63	2.113	21 4 59.13	137.01	-16 0 23.9	791.9	68.69	15 54.1	58 14.9	II. N.
18	16 6.05	1.931	21 57 28.99	126.01	-10 27 45.7	+861.7	65.84	15 38.3	57 17.1	II. N.
19	16 50.76	1.804	22 46 14.90	118.41	- 4 37 37.0	882.1	63.81	15 23.6	56 22.9	II. N.
20	17 33.10	1.734	23 32 39.36	114.19	+ 1 13 5.3	866.3	62.65	15 10.7	55 35.6	II. N.
21	18 14.41	1.716	0 18 1.14	113.11	6 51 46.5	822.9	62.35	15 0.3	54 57.4	II. N.
22	18 55.86	1.745	1 3 31.34	114.82	12 8 6.8	754.8	62.81	14 52.7	54 29.4	II. N.
23	19 38.47	1.812	1 50 11.47	118.85	+16 52 20.1	+661.9	63.89	14 47.8	54 11.5	II. N.
24	20 23.04	1.906	2 38 49.95	124.55	20 54 3.5	541.9	65.38	14 45.7	54 3.7	II. N.
25	21 10.07	2.012	3 29 55.48	130.90	24 1 53.3	392.2	67.02	14 46.0	54 4.9	II. N.
26	21 59.53	2.106	4 23 28.09	136.56	26 4 4.3	214.2	68.44	14 48.5	54 13.9	II. N.
27	22 50.87	2.164	5 18 53.22	140.06	26 50 17.7	+ 14.2	69.29	14 52.7	54 29.5	II. S.
28	23 43.00	2.172	6 15 6.53	140.50	+26 14 12.6	-194.7	69.38	14 58.4	54 50.3	II. S.
30	0 34.69	2.129	7 10 53.06	137.95	24 15 28.9	-396.3	68.72	15 5.1	55 15.1	I. S.
July 1	1 24.94	2.055	8 5 12.74	133.49	21 0 6.3	-576.0	67.59	15 12.7	55 42.9	I. N.
2	2 13.29	1.975	8 57 38.26	128.70	16 38 57.3	-724.0	66.37	15 20.9	56 13.2	I. N.
3	2 59.90	1.913	9 48 18.63	124.96	+11 25 40.2	-836.2	65.43	15 29.7	56 45.3	I. N.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limb.
July 3	h m	m	h m s	s	° ' "	"	s	' "	' "	
	2 59.90	1.913	9 48 18.63	124.96	+11 25 40.2	-836.2	65.43	15 29.7	56 45.3	I. N.
4	3 45.40	1.886	10 37 52.72	123.32	+ 5 35 0.5	-910.7	65.04	15 38.9	57 19.1	I. N.
5	4 30.79	1.906	11 27 20.38	124.51	- 0 37 40.8	-945.9	65.42	15 48.4	57 54.0	I. N.
6	5 17.30	1.980	12 17 55.08	128.95	- 6 55 56.2	-937.6	66.64	15 58.0	58 29.4	I. N.
7	6 6.25	2.109	13 10 57.07	136.75	-13 0 57.2	-878.1	68.71	16 7.3	59 3.6	I. N.
8	6 58.93	2.286	14 7 42.56	147.40	-18 30 7.8	-756.5	71.41	16 15.7	59 34.4	I. N.
9	7 56.15	2.482	15 9 2.00	159.16	-22 56 37.7	-565.7	74.26	16 22.4	59 58.8	I. N.
10	8 57.76	2.641	16 14 45.51	168.75	-25 51 45.9	-301.7	76.50	16 26.3	60 13.1	I. N.
11	10 2.11	2.700	17 23 13.25	172.29	-26 52 3.4	+ 4.2	77.27	16 26.7	60 14.6	I. S.
12	11 6.29	2.627	18 31 31.18	167.92	-25 48 42.9	307.8	76.19	16 23.0	60 1.3	I. S.
13	12 7.40	2.454	19 36 44.73	157.49	-22 52 24.4	+562.5	73.67	16 15.5	59 33.7	I. II. S.
14	13 3.77	2.243	20 37 12.62	144.78	-18 28 24.9	744.3	70.54	16 4.7	58 54.0	II. N.
15	13 55.19	2.048	21 32 42.38	133.05	-13 6 50.8	852.0	67.56	15 51.7	58 6.3	II. N.
16	14 42.42	1.897	22 24 0.79	124.00	- 7 15 2.1	898.0	65.20	15 37.8	57 15.2	II. N.
17	15 26.68	1.800	23 12 19.96	118.13	- 1 14 40.6	897.0	63.65	15 24.2	56 25.2	II. N.
18	16 9.23	1.755	23 58 56.53	115.43	+ 4 37 54.4	+860.7	62.95	15 11.9	55 40.1	II. N.
19	16 51.28	1.757	0 45 3.01	115.58	10 10 12.1	796.4	63.03	15 1.7	55 2.5	II. N.
20	17 33.90	1.801	1 31 44.08	118.22	15 11 42.5	707.0	63.80	14 54.1	54 34.7	II. N.
21	18 18.00	1.878	2 19 53.79	122.86	19 32 28.6	592.4	65.06	14 49.4	54 17.4	II. N.
22	19 4.21	1.975	3 10 10.72	128.67	23 2 8.2	451.2	66.60	14 47.7	54 11.0	II. N.
23	19 52.80	2.072	4 2 50.19	134.52	+25 29 48.5	+222.6	68.10	14 48.8	54 15.1	II. N.
24	20 43.49	2.147	4 57 36.78	139.04	26 45 2.7	+ 90.0	69.20	14 52.5	54 28.8	II. N.
25	21 35.51	2.180	5 53 43.13	141.02	26 39 48.9	-117.6	69.64	14 58.3	54 50.1	II. S.
26	22 27.73	2.164	6 50 1.41	140.05	25 10 47.0	-326.4	69.32	15 5.8	55 17.6	II. S.
27	23 19.05	2.108	7 45 25.36	136.65	22 20 43.0	-520.3	68.41	15 14.4	55 49.2	II. S.
29	0 8.75	2.033	8 39 12.28	132.19	+18 18 13.5	-686.6	67.23	15 23.5	56 22.7	I. N.
30	0 56.69	1.965	9 31 13.41	128.07	13 16 15.8	-816.6	66.15	15 32.6	56 55.9	I. N.
31	1 43.27	1.922	10 21 52.12	125.49	7 30 22.3	-905.7	65.50	15 41.2	57 27.6	I. N.
Aug. 1	2 29.27	1.918	11 11 56.04	125.28	+ 1 17 29.4	-951.2	65.49	15 49.1	57 56.6	I. N.
2	3 15.74	1.963	12 2 28.59	127.94	- 5 4 24.1	-950.2	66.26	15 56.1	58 22.3	I. N.
3	4 3.88	2.057	12 54 41.52	133.64	-11 15 58.4	-898.6	67.83	16 2.1	58 44.5	I. N.
4	4 54.87	2.198	13 49 45.63	142.10	-16 55 49.6	-790.7	70.06	16 7.1	59 2.9	I. N.
5	5 49.60	2.365	14 48 35.21	152.15	-21 40 8.5	-620.4	72.60	16 11.0	59 17.1	I. N.
6	6 48.29	2.520	15 51 22.84	161.45	-25 3 49.6	-388.5	74.86	16 13.5	59 26.1	I. N.
7	7 50.01	2.668	16 57 12.59	166.79	-26 44 35.5	-109.8	76.10	16 14.2	59 28.7	I. N.
8	8 52.64	2.592	18 3 57.41	165.81	-26 29 43.4	+183.1	75.80	16 12.7	59 23.4	I. S.
9	9 53.61	2.475	19 9 2.31	158.74	-24 21 33.9	450.2	74.03	16 8.8	59 9.1	I. S.
10	10 50.97	2.300	20 10 29.44	148.21	-20 37 4.3	661.3	71.38	16 2.5	58 45.9	I. S.
11	11 43.95	2.118	21 7 33.45	137.27	-15 41 33.8	805.0	68.57	15 53.9	58 14.1	I. S.
12	12 32.85	1.965	22 0 32.59	128.05	-10 1 44.3	884.3	66.14	15 43.5	57 36.1	II. N.
13	13 18.60	1.855	22 50 21.11	121.48	- 4 1 20.9	+909.5	64.40	15 32.2	56 54.5	II. N.
14	14 2.29	1.794	23 38 6.30	117.78	+ 2 0 8.3	891.5	63.43	15 20.8	56 12.6	II. N.
15	14 45.05	1.777	0 24 55.99	116.80	7 47 11.1	838.6	63.22	15 10.0	55 33.2	II. N.
16	15 27.94	1.803	1 11 52.75	118.30	13 7 5.6	756.5	63.70	15 1.0	55 0.1	II. N.
17	16 11.84	1.861	1 59 50.57	121.81	+17 48 48.7	+647.8	64.73	14 54.2	54 34.8	II. N.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limb.
	h m	m	h m s	s	° ' "	"	s	' "	' "	
Aug. 17	16 11.84	1.861	1 59 50.57	121.81	+17 48 48.7	+647.8	64.73	14 54.2	54 34.8	II. N.
18	16 57.44	1.942	2 49 30.82	126.71	21 41 53.8	513.3	66.10	14 49.9	54 19.2	II. N.
19	17 45.13	2.031	3 41 16.36	132.08	24 36 4.5	353.4	67.54	14 48.6	54 14.4	II. N.
20	18 34.86	2.109	4 35 4.95	136.75	26 21 30.6	+170.2	68.75	14 50.3	54 20.7	II. N.
21	19 26.13	2.157	5 30 26.08	139.62	26 49 57.4	-30.2	69.45	14 54.9	54 37.7	II. N.
22	20 18.06	2.163	6 26 26.65	140.00	+25 56 26.5	-237.5	69.49	15 2.2	55 4.5	II. S.
23	21 9.64	2.130	7 22 6.85	138.02	23 40 46.5	-438.6	68.91	15 11.6	55 39.0	II. S.
24	22 0.11	2.074	8 16 40.03	134.61	20 8 2.9	-620.8	67.93	15 22.4	56 18.7	II. S.
25	22 49.15	2.024	9 9 46.52	131.01	15 28 9.0	-772.9	66.95	15 33.9	57 0.7	II. S.
26	23 36.91	1.971	10 1 36.94	128.44	9 54 42.5	-887.2	66.24	15 45.0	57 41.6	II. N.
28	0 24.02	1.961	10 52 47.62	127.82	+3 44 16.4	-957.0	66.07	15 55.0	58 18.3	I. N.
29	1 11.37	1.993	11 44 12.80	129.74	-2 44 14.1	-976.6	66.60	16 3.2	58 48.3	I. N.
30	2 0.03	2.070	12 36 56.90	134.40	-9 9 38.5	-940.6	67.88	16 9.0	59 9.9	I. N.
31	2 51.08	2.190	13 32 4.92	141.62	-15 8 39.0	-843.9	69.81	16 12.5	59 22.6	I. N.
Sept. 1	3 45.37	2.337	14 30 28.15	150.42	-20 16 16.3	-683.5	72.08	16 13.6	59 26.8	I. N.
2	4 43.18	2.476	15 32 22.43	158.80	-24 7 21.4	-462.5	74.19	16 12.8	59 23.7	I. N.
3	5 43.78	2.562	16 37 5.20	163.99	-26 20 10.3	-195.9	75.46	16 10.3	59 14.4	I. N.
4	6 45.42	2.558	17 42 50.34	163.75	-26 41 41.4	+88.2	75.39	16 6.4	59 0.3	I. N.
5	7 45.82	2.462	18 47 20.67	157.95	-25 11 59.8	354.5	73.94	16 1.4	58 41.8	I. S.
6	8 43.09	2.305	19 48 43.06	148.56	-22 4 10.5	575.1	71.56	15 55.3	58 19.4	I. S.
7	9 36.37	2.135	20 46 4.86	138.32	-17 39 33.4	+737.6	68.89	15 48.3	57 53.6	I. S.
8	10 25.76	1.986	21 39 32.91	129.33	-12 21 57.8	840.9	66.48	15 40.3	57 24.2	I. S.
9	11 12.00	1.875	22 29 51.69	122.66	-6 33 52.8	891.2	64.65	15 31.6	56 52.5	I. S.
10	11 56.11	1.808	23 18 1.83	118.63	-0 34 57.1	896.4	63.53	15 22.5	56 19.0	I. II. N.
11	12 39.13	1.764	0 5 6.84	117.20	+5 18 3.2	862.7	63.15	15 13.4	55 45.6	II. N.
12	13 22.06	1.800	0 52 6.33	118.12	+10 50 43.7	+795.4	63.44	15 4.9	55 14.4	II. N.
13	14 5.76	1.847	1 39 52.21	121.00	15 50 19.0	697.7	64.29	14 57.6	54 47.5	II. N.
14	14 50.91	1.918	2 29 4.92	125.25	20 5 9.7	571.9	65.52	14 51.9	54 26.7	II. N.
15	15 37.90	1.998	3 20 8.42	130.07	23 24 23.5	420.0	66.87	14 48.5	54 14.1	II. N.
16	16 26.76	2.071	4 13 4.74	134.45	25 38 8.7	245.4	68.09	14 47.7	54 11.1	II. N.
17	17 17.12	2.120	5 7 31.10	137.42	+26 38 19.1	+53.4	68.89	14 49.8	54 18.8	II. N.
18	18 8.25	2.134	6 2 43.89	138.27	26 19 42.9	-147.1	69.12	14 54.9	54 37.6	II. N. S.
19	18 59.29	2.114	6 57 51.10	137.02	24 41 1.0	-345.3	68.77	15 2.9	55 7.1	II. S.
20	19 49.51	2.069	7 52 9.30	134.35	21 45 8.8	-531.3	68.02	15 13.6	55 46.2	II. S.
21	20 38.56	2.019	8 45 17.08	131.35	17 38 55.0	-695.7	67.16	15 26.2	56 32.7	II. S.
22	21 26.54	1.983	9 37 20.25	129.13	+12 32 27.5	-831.1	66.50	15 40.1	57 23.5	II. S.
23	22 13.06	1.975	10 28 49.61	128.66	6 38 57.0	-929.6	66.32	15 54.0	58 14.5	II. S.
24	23 1.65	2.007	11 20 35.18	130.57	+0 14 51.7	-982.4	66.78	16 6.6	59 1.1	II. S.
25	23 50.64	2.084	12 13 39.37	135.25	-6 19 35.3	-979.6	67.99	16 16.9	59 38.8	I. N.
27	0 42.03	2.205	13 9 7.96	142.54	-12 40 6.2	-911.2	69.88	16 23.8	60 4.0	I. N.
28	1 36.74	2.356	14 7 56.04	151.63	-18 18 51.2	-770.2	72.21	16 26.6	60 14.6	I. N.
29	2 35.12	2.504	15 10 25.05	160.53	-22 46 39.3	-557.7	74.44	16 25.6	60 10.8	I. N.
30	3 36.53	2.601	16 15 56.44	166.32	-25 37 31.3	-289.6	75.90	16 21.1	59 54.3	I. N.
Oct. 1	4 39.18	2.662	17 22 42.12	166.43	-26 35 7.0	+2.3	75.98	16 14.1	59 28.5	I. N.
2	5 40.63	2.504	18 28 15.26	160.48	-25 37 50.1	+28.6	74.58	16 5.5	58 56.9	I. S.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limb.
	h m	m	h m s	s	° ' "	"	s	' "	' "	
Oct. 2	5 40.63	2.504	18 28 15.26	160.48	-25 37 50.1	+278.6	74.58	16 5.5	58 56.9	I. S.
3	6 38.82	2.338	19 30 32.98	150.54	-22 58 28.8	509.0	72.13	15 56.1	58 22.3	I. S.
4	7 32.74	2.156	20 28 33.89	139.59	-18 58 33.9	680.6	69.31	15 46.5	57 47.2	I. S.
5	8 22.49	1.995	21 22 23.65	129.89	-14 1 40.7	794.7	66.72	15 37.2	57 12.9	I. S.
6	9 8.84	1.874	22 12 48.40	122.63	- 8 29 29.3	858.5	64.70	15 28.2	56 40.0	I. S.
7	9 52.83	1.799	23 0 51.60	118.11	- 2 40 35.6	+879.3	63.40	15 19.8	56 8.9	I. S.
8	10 35.56	1.769	23 47 39.42	116.30	+ 3 9 3.7	863.0	62.85	15 11.8	55 39.6	I. S.
9	11 18.08	1.780	0 34 13.75	116.93	8 45 20.1	812.9	62.99	15 4.5	55 12.7	I. N.
10	12 1.26	1.824	1 21 28.40	119.59	13 55 7.4	730.9	63.72	14 57.9	54 48.7	II. N.
11	12 45.82	1.892	2 10 5.65	123.71	18 25 55.2	618.1	64.87	14 52.4	54 28.5	II. N.
12	13 32.17	1.971	3 0 31.30	128.45	+22 5 46.7	+476.6	66.20	14 48.4	54 13.5	II. N.
13	14 20.40	2.045	3 52 49.13	132.87	24 43 48.2	309.8	67.43	14 46.0	54 4.8	II. N.
14	15 10.13	2.095	4 46 37.77	135.88	26 11 7.3	+124.4	68.29	14 45.8	54 4.1	II. N.
15	16 0.65	2.109	5 41 13.98	136.77	26 22 5.0	- 70.2	68.58	14 48.0	54 12.2	II. N.
16	16 51.09	2.088	6 35 45.00	135.49	25 15 8.7	-263.4	68.31	14 53.1	54 30.9	II. S.
17	17 40.68	2.042	7 29 25.38	132.70	+22 52 53.3	-445.4	67.60	15 1.0	55 0.1	II. S.
18	18 29.04	1.988	8 21 51.24	129.48	19 21 14.6	-609.3	66.74	15 11.8	55 39.6	II. S.
19	19 16.21	1.946	9 13 5.92	126.95	14 48 30.0	-750.2	66.04	15 25.0	56 28.2	II. S.
20	20 2.68	1.932	10 3 38.52	126.12	9 24 47.0	-863.3	65.75	15 40.1	57 23.5	II. S.
21	20 49.28	1.959	10 54 18.70	127.68	+ 3 22 24.4	-942.1	66.11	15 56.0	58 21.9	II. S.
22	21 37.08	2.033	11 46 11.15	132.19	- 3 3 2.2	-976.6	67.24	16 11.4	59 18.6	II. S.
23	22 27.30	2.160	12 40 28.90	139.79	- 9 31 9.0	-952.8	69.16	16 24.8	60 7.7	II. S.
24	23 21.10	2.329	13 38 22.29	150.00	-15 35 38.5	-856.1	71.70	16 34.5	60 43.4	II. N.
26	0 19.24	2.515	14 40 36.93	161.16	-20 44 55.5	-676.2	74.43	16 39.3	61 1.1	I. N.
27	1 21.52	2.665	15 47 0.12	170.07	-24 26 9.6	-418.7	76.59	16 38.8	60 59.2	I. N.
28	2 26.27	2.713	16 55 52.64	173.06	-26 13 27.2	-113.6	77.36	16 33.2	60 38.5	I. N.
29	3 30.69	2.635	18 4 25.03	168.40	-25 57 7.3	+190.8	76.33	16 23.5	60 3.0	I. N.
30	4 31.98	2.460	19 9 48.62	157.88	-23 46 58.2	449.8	73.86	16 11.3	59 18.1	I. S.
31	5 28.50	2.249	20 10 25.92	145.17	-20 6 19.4	641.9	70.75	15 57.9	58 29.1	I. S.
Nov. 1	6 20.07	2.054	21 6 5.43	133.45	-15 22 21.5	767.7	67.73	15 44.6	57 40.2	I. S.
2	7 7.48	1.904	21 57 33.36	124.38	- 9 59 32.0	+838.2	65.28	15 32.2	56 54.5	I. S.
3	7 51.86	1.804	22 46 0.60	118.43	- 4 17 34.6	865.1	63.60	15 21.1	56 13.7	I. S.
4	8 34.49	1.757	23 32 42.23	115.53	+ 1 27 49.4	856.4	62.74	15 11.5	55 38.5	I. S.
5	9 16.54	1.754	0 18 48.50	115.41	7 330.3	816.8	62.64	15 3.4	55 8.9	I. S.
6	9 59.02	1.791	1 5 20.89	117.64	12 17 26.4	747.7	63.19	14 56.8	54 44.5	I. S.
7	10 42.76	1.858	1 53 9.21	121.64	+16 57 46.8	+648.9	64.24	14 51.5	54 25.2	I. N. S.
8	11 28.33	1.940	2 42 47.06	126.61	20 52 33.9	520.1	65.56	14 47.6	54 10.8	I. N.
9	12 15.90	2.022	3 34 25.64	131.49	23 50 6.5	363.3	66.86	14 45.1	54 1.5	II. N.
10	13 5.20	2.082	4 27 48.47	135.10	25 40 11.4	+184.1	67.84	14 44.0	53 57.6	II. N.
11	13 55.52	2.105	5 22 12.51	136.48	26 15 40.2	- 7.8	68.26	14 44.6	53 59.9	II. N.
12	14 45.88	2.086	6 16 39.00	135.33	+25 33 56.2	-199.9	68.03	14 47.2	54 9.4	II. N. S.
13	15 35.36	2.034	7 10 12.30	132.20	23 37 15.2	-380.8	67.29	14 52.0	54 26.9	II. S.
14	16 23.37	1.967	8 2 17.53	128.20	20 31 51.8	-542.5	66.29	14 59.2	54 53.4	II. S.
15	17 9.83	1.907	8 52 49.09	124.60	16 26 25.8	-680.7	65.37	15 8.9	55 29.2	II. S.
16	17 55.11	1.872	9 42 9.95	122.48	+11 30 44.2	-793.6	64.80	15 21.2	56 14.0	II. S.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ' "	"	s	' "	' "	
Nov. 16	17 55.11	1.872	9 42 9.95	122.48	+11 30 44.2	-793.6	64.80	15 21.2	56 14.0	II. S.
17	18 39.98	1.875	10 31 6.14	122.66	+ 5 55 18.3	-878.8	64.84	15 35.6	57 7.0	II. S.
18	19 25.49	1.927	11 20 40.95	125.77	- 0 7 56.5	-931.4	65.65	15 51.5	58 5.4	II. S.
19	20 12.91	2.034	12 12 10.41	132.26	- 6 24 9.6	-941.6	67.31	16 7.8	59 5.5	II. S.
20	21 3.60	2.199	13 6 56.85	142.15	-12 33 29.2	-894.0	69.80	16 23.3	60 2.1	II. S.
21	21 58.81	2.407	14 6 15.14	154.66	-18 9 19.4	-771.1	72.87	16 35.9	60 48.4	II. S.
22	22 59.18	2.619	15 10 43.33	167.41	-22 38 44.2	-561.1	75.90	16 44.0	61 18.3	II. N.
24	0 3.99	2.765	16 19 39.43	176.21	-25 27 41.0	-273.0	77.95	16 46.4	61 27.1	I. N.
25	1 10.82	2.778	17 30 36.44	177.01	-26 12 0.7	+ 52.8	78.16	16 42.7	61 13.4	I. N.
26	2 16.18	2.648	18 40 5.59	169.17	-24 48 25.2	356.9	76.39	16 33.5	60 39.6	I. N. S.
27	3 17.22	2.431	19 45 14.82	156.11	-21 35 27.3	+594.6	73.33	16 20.2	59 51.0	I. S.
28	4 12.77	2.201	20 44 53.34	142.26	-17 3 24.7	752.6	69.94	16 4.8	58 54.3	I. S.
29	5 3.16	2.006	21 39 21.39	130.56	-11 42 48.9	840.0	66.95	15 48.8	57 55.7	I. S.
30	5 49.52	1.867	22 29 47.37	122.18	- 5 58 33.4	873.6	64.71	15 33.7	56 59.9	I. S.
Dec. 1	6 33.23	1.785	23 17 33.80	117.25	- 0 9 15.4	867.1	63.34	15 20.1	56 10.2	I. S.
2	7 15.62	1.756	0 4 0.71	115.49	+ 5 31 4.4	+829.7	62.82	15 8.7	55 28.3	I. S.
3	7 57.88	1.773	0 50 19.53	116.50	10 50 57.5	765.3	63.04	14 59.6	54 54.7	I. S.
4	8 41.00	1.826	1 37 30.39	119.73	15 39 47.7	674.4	63.86	14 52.6	54 29.3	I. S.
5	9 25.74	1.905	2 26 18.53	124.46	19 46 49.6	556.1	65.08	14 47.9	54 11.8	I. S.
6	10 12.50	1.992	3 17 8.45	129.69	23 0 56.0	409.9	66.41	14 45.0	54 1.2	I. S.
7	11 1.23	2.066	4 9 57.21	134.14	+25 11 23.5	+238.6	67.54	14 43.8	53 56.9	I. N.
8	11 51.39	2.107	5 4 11.18	136.61	26 9 30.8	+ 49.9	68.17	14 44.2	53 58.2	I. II. N.
9	12 41.99	2.103	5 58 52.54	136.38	25 50 37.3	-144.2	68.12	14 46.0	54 4.9	II. N.
10	13 31.08	2.057	6 52 56.64	133.60	24 15 19.0	-329.9	67.44	14 49.3	54 17.1	II. S.
11	14 20.52	1.985	7 45 33.17	129.28	21 29 15.6	-496.4	66.36	14 54.2	54 34.9	II. S.
12	15 7.23	1.909	8 36 20.24	124.71	+17 41 40.2	-636.9	65.22	15 0.7	54 59.0	II. S.
13	15 52.28	1.850	9 25 27.30	121.14	13 3 27.7	-749.4	64.31	15 9.1	55 29.8	II. S.
14	16 36.27	1.822	10 13 30.15	119.49	7 46 0.3	-833.1	63.91	15 19.4	56 7.6	II. S.
15	17 20.10	1.839	11 1 24.14	120.51	+ 2 0 52.6	-887.3	64.22	15 31.5	56 52.2	II. S.
16	18 4.95	1.908	11 50 19.08	124.65	- 3 59 21.6	-907.7	65.36	15 45.3	57 42.7	II. S.
17	18 52.15	2.035	12 41 34.92	132.27	- 9 59 37.3	-885.5	67.38	16 0.0	58 36.7	II. S.
18	19 43.07	2.217	13 36 35.21	143.26	-15 40 15.9	-806.9	70.17	16 14.7	59 30.5	II. S.
19	20 38.90	2.438	14 36 30.56	156.53	-20 35 26.5	-655.7	73.41	16 27.8	60 18.9	II. S.
20	21 40.03	2.649	15 41 45.33	169.24	-24 13 46.5	-422.5	76.38	16 37.9	60 56.0	II. S.
21	22 45.39	2.777	16 51 14.10	176.93	-26 4 12.1	-121.0	78.13	16 43.3	61 15.7	II. N.
22	23 52.17	2.762	18 2 8.55	176.06	-25 47 23.9	+204.0	77.90	16 43.1	61 14.8	II. N.
24	0 56.88	2.612	19 10 58.41	166.99	-23 25 48.6	493.8	75.80	16 36.9	60 52.3	I. N.
25	1 56.99	2.392	20 15 11.12	153.74	-19 22 37.5	707.9	72.64	16 25.8	60 11.4	I. S.
26	2 51.69	2.172	21 13 59.00	140.52	-14 10 43.2	838.2	69.39	16 11.2	59 17.9	I. S.
27	3 41.58	1.994	22 7 56.67	129.83	- 8 21 39.2	896.6	66.67	15 55.0	58 18.2	I. S.
28	4 27.86	1.872	22 58 17.63	122.51	- 2 20 34.0	+901.2	64.76	15 38.7	57 18.3	I. S.
29	5 11.90	1.808	23 46 24.35	118.60	+ 3 34 5.0	866.5	63.72	15 23.6	56 22.9	I. S.
30	5 55.01	1.793	0 33 34.62	117.74	9 8 42.0	802.1	63.50	15 10.6	55 35.2	I. S.
31	6 38.31	1.822	1 20 56.26	119.45	+14 12 22.9	+712.2	63.96	15 0.1	54 56.8	I. S.

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
Jan. 0	1 21.0	20 3 46.20	22 10 59.4	7.8	3.0	0.21	Feb. 14	22 28.6	20 12 10.23	19 38 36.9	9.2	3.5	0.25
1	1 22.9	20 9 31.88	21 46 53.2	7.9	3.0	0.21	15	22 29.0	20 16 29.75	19 35 15.8	9.0	3.4	0.25
2	1 24.4	20 15 3.40	21 21 50.3	8.1	3.1	0.22	16	22 29.6	20 20 59.48	19 30 38.7	8.9	3.4	0.24
3	1 25.7	20 20 18.58	20 56 0.0	8.3	3.2	0.22	17	22 30.3	20 25 38.52	19 24 45.0	8.8	3.3	0.24
4	1 26.7	20 25 15.16	20 29 33.6	8.6	3.2	0.23	18	22 31.1	20 30 26.09	19 17 34.3	8.6	3.3	0.23
5	1 27.3	20 29 50.59	20 2 44.4	8.8	3.3	0.24	19	22 32.0	20 35 21.46	19 9 6.2	8.5	3.2	0.23
6	1 27.6	20 34 2.11	19 35 47.6	9.0	3.4	0.24	20	22 33.1	20 40 24.00	18 59 20.4	8.4	3.2	0.23
7	1 27.4	20 37 46.72	19 8 59.9	9.3	3.5	0.25	21	22 34.4	20 45 33.09	18 48 16.7	8.3	3.1	0.22
8	1 26.7	20 41 1.29	18 42 40.2	9.5	3.6	0.25	22	22 35.7	20 50 48.21	18 35 54.9	8.2	3.1	0.22
9	1 25.5	20 43 42.56	18 17 9.3	9.8	3.7	0.26	23	22 37.0	20 56 8.89	18 22 15.0	8.1	3.0	0.21
10	1 23.7	20 45 47.26	17 52 49.2	10.1	3.8	0.26	24	22 38.5	21 1 34.67	18 7 16.8	8.0	3.0	0.21
11	1 21.2	20 47 12.26	17 30 2.6	10.4	3.9	0.27	25	22 40.0	21 7 5.17	17 51 0.3	7.9	3.0	0.21
12	1 18.0	20 47 54.76	17 9 12.6	10.8	4.0	0.28	26	22 41.7	21 12 40.04	17 33 25.7	7.8	3.0	0.20
13	1 14.0	20 47 52.48	16 50 41.4	11.1	4.1	0.28	27	22 43.5	21 18 18.99	17 14 32.9	7.7	2.9	0.20
14	1 9.3	20 47 3.88	16 34 48.7	11.4	4.3	0.29	28	22 45.2	21 24 1.72	16 54 22.1	7.6	2.9	0.20
15	1 3.7	20 45 28.51	16 21 51.7	11.7	4.4	0.30	Mar. 1	22 47.0	21 29 47.94	16 32 53.5	7.5	2.9	0.20
16	0 57.5	20 43 7.15	16 12 2.9	12.1	4.5	0.31	2	22 48.9	21 35 37.48	16 10 7.2	7.5	2.8	0.20
17	0 50.6	20 40 2.14	16 5 29.0	12.4	4.6	0.32	3	22 50.8	21 41 30.14	15 46 3.3	7.4	2.8	0.19
18	0 42.9	20 36 17.41	16 2 10.7	12.6	4.7	0.33	4	22 52.8	21 47 25.75	15 20 42.0	7.3	2.8	0.19
19	0 34.6	20 31 58.58	16 2 2.4	12.9	4.8	0.34	5	22 54.8	21 53 24.17	14 54 3.6	7.2	2.7	0.19
20	0 25.9	20 27 12.69	16 4 51.6	13.1	4.9	0.34	6	22 56.9	21 59 25.30	14 26 8.5	7.2	2.7	0.19
21	0 16.9	20 22 7.99	16 10 21.4	13.3	5.0	0.35	7	22 59.0	22 5 29.04	13 56 56.8	7.1	2.7	0.19
22	0 7.7	20 16 53.40	16 18 10.1	13.4	5.0	0.35	8	23 1.2	22 11 35.33	13 26 28.9	7.0	2.7	0.19
22	23 58.5	20 11 38.05	16 27 54.2	13.4	5.1	0.36	9	23 3.4	22 17 44.11	12 54 45.0	7.0	2.6	0.18
23	23 49.5	20 6 30.76	16 39 9.0	13.4	5.1	0.36	10	23 5.6	22 23 55.34	12 21 45.4	6.9	2.6	0.18
24	23 40.6	20 1 39.41	16 51 31.2	13.3	5.0	0.35	11	23 7.9	22 30 9.03	11 47 30.3	6.9	2.6	0.18
25	23 32.2	19 57 10.81	17 4 39.4	13.3	5.0	0.35	12	23 10.2	22 36 25.17	11 12 0.2	6.9	2.6	0.18
26	23 24.3	19 53 10.32	17 18 13.7	13.2	4.9	0.34	13	23 12.6	22 42 43.79	10 35 15.5	6.8	2.6	0.18
27	23 17.0	19 49 41.81	17 31 57.6	13.0	4.8	0.34	14	23 15.0	22 49 4.95	9 57 16.6	6.8	2.6	0.18
28	23 10.1	19 46 47.81	17 45 37.0	12.8	4.8	0.34	15	23 17.4	22 55 28.69	9 18 4.1	6.8	2.6	0.17
29	23 4.0	19 44 29.64	17 59 0.4	12.6	4.7	0.33	16	23 19.9	23 1 55.07	8 37 38.4	6.7	2.5	0.17
30	22 58.3	19 42 47.48	18 11 58.0	12.3	4.6	0.33	17	23 22.4	23 8 24.18	7 56 0.3	6.7	2.5	0.17
31	22 53.2	19 41 40.78	18 24 21.7	12.1	4.5	0.32	18	23 25.0	23 14 56.12	7 13 10.5	6.7	2.5	0.17
Feb. 1	22 48.7	19 41 8.41	18 36 4.9	11.8	4.4	0.32	19	23 27.6	23 21 31.00	6 29 9.8	6.7	2.5	0.17
2	22 44.6	19 41 8.74	18 47 2.0	11.6	4.3	0.31	20	23 30.4	23 28 8.93	5 43 59.3	6.6	2.5	0.17
3	22 41.4	19 41 39.90	18 57 8.5	11.3	4.2	0.31	21	23 33.1	23 34 50.03	4 57 40.1	6.6	2.5	0.17
4	22 38.5	19 42 39.93	19 6 20.3	11.1	4.1	0.30	22	23 35.9	23 41 34.43	4 10 13.4	6.6	2.5	0.17
5	22 36.0	19 44 6.77	19 14 33.8	10.9	4.1	0.30	23	23 38.7	23 48 22.25	3 21 41.1	6.6	2.5	0.17
6	22 33.9	19 45 58.39	19 21 46.4	10.7	4.0	0.29	24	23 41.6	23 55 13.61	2 32 5.2	6.6	2.5	0.17
7	22 32.2	19 48 12.81	19 27 55.3	10.4	3.9	0.28	25	23 44.6	0 2 8.62	1 41 27.9	6.6	2.5	0.17
8	22 30.8	19 50 48.17	19 32 58.1	10.2	3.9	0.28	26	23 47.7	0 9 7.41	0 49 51.7	6.6	2.5	0.17
9	22 29.8	19 53 42.72	19 36 52.9	10.0	3.8	0.27	27	23 50.8	0 16 10.07	0 2 40.5	6.6	2.5	0.17
10	22 29.1	19 56 54.80	19 39 38.4	9.8	3.8	0.27	28	23 53.9	0 23 16.63	0 56 4.3	6.6	2.5	0.17
11	22 28.6	20 0 22.94	19 41 12.7	9.7	3.7	0.26	29	23 57.1	0 30 27.14	1 50 15.6	6.6	2.5	0.17
12	22 28.4	20 4 5.72	19 41 34.5	9.5	3.6	0.26	31	0 0.4	0 37 41.58	2 45 9.5	6.6	2.5	0.17
13	22 28.4	20 8 1.87	19 40 42.8	9.3	3.6	0.25	32	0 3.7	0 44 59.88	3 40 40.3	6.6	2.5	0.17
14	22 28.6	20 12 10.23	19 38 36.9	9.2	3.5	0.25	33	0 7.1	0 52 21.93	4 36 41.3	6.6	2.5	0.17

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
Apr. 1	h m	h m s	° ' "	"	"	s	May 17	h m	h m s	° ' "	"	"	s
2	0 3.7	0 44 59.88	+ 3 40 40.3	6.6	2.5	0.17	17	0 18.9	4 1 40.24	+20 20 45.1	15.7	5.9	0.42
3	0 7.1	0 52 21.93	4 36 41.3	6.6	2.5	0.17	18	0 13.1	3 59 45.71	19 57 32.3	15.8	6.0	0.43
4	0 10.6	0 59 47.51	5 33 4.8	6.6	2.5	0.17	19	0 7.2	3 57 44.88	19 33 50.3	15.9	6.0	0.43
5	0 14.1	1 7 16.32	6 29 42.2	6.7	2.5	0.17	20	0 1.2	3 55 40.06	19 9 54.5	16.0	6.1	0.43
6	0 17.7	1 14 47.99	7 26 24.3	6.7	2.5	0.17	20	23 55.2	3 53 33.60	18 46 1.2	16.1	6.1	0.43
7	0 21.4	1 22 22.00	+ 8 23 0.4	6.7	2.5	0.17	21	23 49.1	3 51 27.77	+18 22 26.8	16.1	6.1	0.43
8	0 25.0	1 29 57.74	9 19 19.1	6.8	2.6	0.17	22	23 43.1	3 49 24.86	17 59 27.6	16.0	6.0	0.43
9	0 28.6	1 37 34.48	10 15 8.5	6.9	2.6	0.17	23	23 37.2	3 47 26.96	17 37 19.2	15.9	6.0	0.42
10	0 32.3	1 45 11.37	11 10 15.8	7.0	2.6	0.18	24	23 31.5	3 45 36.07	17 16 16.6	15.8	6.0	0.42
11	0 36.0	1 52 47.46	12 4 27.7	7.1	2.7	0.18	25	23 25.9	3 43 54.05	16 56 33.6	15.8	6.0	0.42
12	0 39.6	2 0 21.68	+12 57 31.1	7.2	2.7	0.18	26	23 20.5	3 42 22.51	+16 38 22.4	15.7	5.9	0.41
13	0 43.1	2 7 52.86	13 49 13.1	7.3	2.8	0.18	27	23 15.2	3 41 2.91	16 21 53.7	15.5	5.9	0.41
14	0 46.6	2 15 19.81	14 39 21.0	7.4	2.8	0.19	28	23 10.1	3 39 56.44	16 7 16.5	15.3	5.8	0.40
15	0 50.0	2 22 41.31	15 27 42.9	7.5	2.9	0.19	29	23 5.3	3 39 4.17	15 54 37.7	15.0	5.7	0.40
16	0 53.3	2 29 56.08	16 14 8.0	7.7	3.0	0.20	30	23 0.8	3 38 26.96	15 44 2.8	14.8	5.6	0.39
17	0 56.5	2 37 2.84	+16 58 26.7	7.8	3.0	0.20	31	22 56.5	3 38 5.46	+15 35 35.5	14.6	5.5	0.38
18	0 59.5	2 44 0.40	17 40 31.0	8.0	3.1	0.21	June 1	22 52.5	3 38 0.15	15 29 17.8	14.3	5.4	0.37
19	1 2.3	2 50 47.56	18 20 14.1	8.1	3.2	0.21	2	22 48.7	3 38 11.40	15 25 10.1	14.1	5.3	0.37
20	1 5.0	2 57 23.19	18 57 30.6	8.3	3.2	0.22	3	22 45.3	3 38 39.45	15 23 11.9	13.8	5.2	0.36
21	1 7.4	3 3 46.27	19 32 16.8	8.5	3.3	0.22	4	22 42.1	3 39 24.44	15 23 21.1	13.5	5.1	0.35
22	1 9.6	3 9 55.78	+20 4 29.9	8.7	3.3	0.23	5	22 39.2	3 40 26.43	+15 25 35.0	13.2	5.0	0.34
23	1 11.6	3 15 50.81	20 34 8.5	9.0	3.4	0.24	6	22 36.6	3 41 45.40	15 29 49.7	13.0	4.9	0.34
24	1 13.3	3 21 30.49	21 1 11.9	9.2	3.5	0.25	7	22 34.3	3 43 21.30	15 36 0.9	12.7	4.8	0.33
25	1 14.8	3 26 54.06	21 25 40.5	9.4	3.5	0.25	8	22 32.2	3 45 14.03	15 44 3.7	12.4	4.7	0.32
26	1 16.0	3 32 0.76	21 47 35.2	9.7	3.6	0.26	9	22 30.4	3 47 23.45	15 53 52.5	12.1	4.6	0.32
27	1 16.9	3 36 49.90	+22 6 57.4	9.9	3.7	0.27	10	22 28.9	3 49 49.44	+16 5 21.2	11.9	4.5	0.31
28	1 17.4	3 41 20.85	22 23 48.6	10.2	3.8	0.28	11	22 27.7	3 52 31.89	16 18 23.9	11.6	4.4	0.30
29	1 17.6	3 45 33.03	22 38 11.2	10.4	3.9	0.29	12	22 26.7	3 55 30.67	16 32 54.0	11.4	4.3	0.30
30	1 17.2	3 49 25.88	22 50 7.5	10.7	4.1	0.30	13	22 26.0	3 58 45.65	16 48 44.8	11.1	4.2	0.29
May 1	1 16.4	3 52 58.89	22 59 39.6	11.0	4.2	0.30	14	22 25.6	4 2 16.75	17 5 49.4	10.8	4.1	0.29
2	1 15.4	3 56 11.62	+23 6 49.8	11.3	4.3	0.31	15	22 25.4	4 6 3.90	+17 24 0.6	10.6	4.0	0.28
3	1 14.0	3 59 3.67	23 11 40.3	11.6	4.4	0.32	16	22 25.5	4 10 7.05	17 43 11.4	10.3	3.9	0.28
4	1 12.2	4 1 34.72	23 14 13.4	12.0	4.5	0.33	17	22 25.9	4 14 26.18	18 3 14.3	10.1	3.8	0.27
5	1 10.0	4 3 44.52	23 14 31.5	12.3	4.7	0.33	18	22 26.5	4 19 1.26	18 24 1.5	9.8	3.7	0.27
6	1 7.5	4 5 32.88	23 12 36.9	12.6	4.8	0.34	19	22 27.4	4 23 52.35	18 45 25.0	9.6	3.6	0.26
7	1 4.7	4 6 59.77	+23 8 32.1	12.9	4.9	0.35	20	22 28.6	4 28 59.46	+19 7 16.7	9.4	3.5	0.25
8	1 1.5	4 8 5.26	23 2 19.9	13.2	5.0	0.36	21	22 30.0	4 34 22.65	19 29 28.2	9.2	3.5	0.25
9	0 58.0	4 8 49.55	22 54 3.5	13.5	5.1	0.37	22	22 31.8	4 40 1.96	19 51 50.6	9.0	3.4	0.24
10	0 54.1	4 9 13.02	22 43 46.4	13.8	5.2	0.38	23	22 33.7	4 45 57.44	20 14 14.8	8.8	3.3	0.24
11	0 49.9	4 9 16.21	22 31 32.5	14.1	5.3	0.38	24	22 36.0	4 52 9.14	20 36 30.9	8.6	3.2	0.23
12	0 45.4	4 8 59.86	+22 17 27.0	14.4	5.4	0.39	25	22 38.5	4 58 37.08	+20 58 28.9	8.3	3.2	0.23
13	0 40.5	4 8 24.97	22 1 35.9	14.7	5.5	0.40	26	22 41.3	5 5 21.22	21 19 58.3	8.2	3.1	0.22
14	0 35.5	4 7 32.67	21 44 6.2	14.9	5.6	0.40	27	22 44.4	5 12 21.48	21 40 48.3	8.1	3.0	0.22
15	0 30.2	4 6 24.35	21 25 5.9	15.2	5.7	0.41	28	22 47.7	5 19 37.70	22 0 47.1	7.9	3.0	0.21
16	0 24.7	4 5 1.60	21 4 44.8	15.4	5.8	0.41	29	22 51.3	5 27 9.60	22 19 43.1	7.8	2.9	0.21
17	0 18.9	4 3 26.24	+20 43 13.8	15.6	5.9	0.42	30	22 55.1	5 34 56.80	+22 37 24.2	7.7	2.9	0.21
		4 1 40.24	+20 20 45.1	15.7	5.9	0.42	31	22 59.1	5 42 58.77	+22 53 37.9	7.6	2.8	0.21

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
July 1	h m	h m s	° ' "	"	"	s	Aug. 17	h m	h m s	° ' "	"	"	s
2	22 59.1	5 42 58.77	+22 53 37.9	7.6	2.8	0.21	18	1 39.0	11 24 38.44	+2 57 56.8	8.4	3.1	0.21
3	23 3.4	5 51 14.84	23 8 12.3	7.5	2.8	0.21	19	1 39.5	11 29 5.10	2 19 9.2	8.5	3.2	0.21
4	23 7.9	5 59 44.14	23 20 55.0	7.4	2.7	0.20	20	1 39.9	11 33 24.36	1 40 56.9	8.6	3.2	0.21
5	23 12.7	6 8 25.62	23 31 34.5	7.2	2.7	0.20	21	1 40.1	11 37 36.08	1 3 23.3	8.7	3.3	0.22
6	23 17.7	6 17 18.05	23 40 0.4	7.1	2.7	0.20	22	1 40.2	11 41 40.09	+0 26 32.0	8.8	3.3	0.22
7	23 22.7	6 26 20.07	+23 46 2.8	7.0	2.7	0.20	23	1 40.2	11 45 36.16	-0 9 33.2	9.0	3.4	0.22
8	23 27.9	6 35 30.09	23 49 33.2	6.9	2.6	0.19	24	1 40.1	11 49 24.06	0 44 48.6	9.1	3.5	0.23
9	23 33.2	6 44 46.45	23 50 25.3	6.9	2.6	0.19	25	1 39.8	11 53 3.45	1 19 9.8	9.2	3.5	0.23
10	23 38.7	6 54 7.38	23 48 33.8	6.8	2.6	0.19	26	1 39.4	11 56 34.01	1 52 32.7	9.3	3.6	0.23
11	23 44.1	7 3 31.06	23 43 56.0	6.8	2.6	0.19	27	1 38.8	11 59 55.30	2 24 52.1	9.5	3.7	0.24
12	23 49.6	7 12 55.70	+23 36 30.7	6.7	2.6	0.19	28	1 38.0	12 3 6.88	-2 56 2.9	9.6	3.7	0.24
13	23 55.0	7 22 19.53	23 26 19.1	6.7	2.5	0.18	29	1 37.2	12 6 8.22	3 25 59.7	9.8	3.8	0.25
14	0 0.4	7 31 40.91	23 13 24.3	6.7	2.5	0.18	30	1 36.2	12 8 58.75	3 54 36.2	10.0	3.8	0.25
15	0 5.7	7 40 58.32	22 57 50.8	6.6	2.5	0.18	31	1 34.8	12 11 37.82	4 21 45.9	10.2	3.9	0.25
16	0 10.9	7 50 10.36	22 39 44.5	6.6	2.5	0.18	1	1 33.3	12 14 4.71	4 47 21.5	10.3	3.9	0.26
17	0 16.1	7 59 15.83	+22 19 12.5	6.6	2.5	0.18	2	1 31.6	12 16 18.65	-5 11 15.3	10.5	4.0	0.26
18	0 21.1	8 8 13.71	21 56 22.6	6.6	2.5	0.18	3	1 29.7	12 18 18.80	5 33 18.9	10.7	4.0	0.27
19	0 26.0	8 17 3.12	21 31 23.4	6.6	2.5	0.18	4	1 27.5	12 20 4.26	5 53 23.1	10.9	4.1	0.27
20	0 30.7	8 25 43.42	21 4 23.8	6.6	2.5	0.18	5	1 25.1	12 21 34.09	6 11 18.0	11.1	4.1	0.28
21	0 35.3	8 34 14.07	20 35 32.7	6.6	2.5	0.18	6	1 22.4	12 22 47.30	6 26 52.7	11.3	4.2	0.28
22	0 39.7	8 42 34.70	+20 4 59.4	6.6	2.5	0.18	7	1 19.4	12 23 42.86	-6 39 55.9	11.5	4.3	0.29
23	0 43.9	8 50 45.06	19 32 52.7	6.7	2.5	0.18	8	1 16.0	12 24 19.74	6 50 15.4	11.7	4.4	0.29
24	0 48.0	8 58 45.01	18 59 21.2	6.7	2.5	0.18	9	1 12.3	12 24 36.93	6 57 38.6	11.9	4.5	0.30
25	0 51.8	9 6 34.50	18 24 33.1	6.7	2.5	0.18	10	1 8.3	12 24 33.46	7 1 52.6	12.1	4.6	0.31
26	0 55.5	9 14 13.57	17 48 36.3	6.8	2.5	0.18	11	1 4.0	12 24 8.53	7 2 44.3	12.3	4.7	0.31
27	0 59.0	9 21 42.32	+17 11 38.3	6.8	2.6	0.18	12	0 59.2	12 23 21.45	-7 0 0.8	12.6	4.7	0.32
28	1 2.3	9 29 0.86	16 33 46.1	6.8	2.6	0.18	13	0 54.2	12 22 11.77	6 53 30.4	12.8	4.8	0.32
29	1 5.5	9 36 9.36	15 55 6.5	6.9	2.6	0.18	14	0 48.7	12 20 39.33	6 43 2.8	13.0	4.9	0.33
30	1 8.5	9 43 8.04	15 15 45.7	6.9	2.6	0.18	15	0 42.9	12 18 44.47	6 28 30.5	13.1	4.9	0.33
31	1 11.4	9 49 57.12	14 35 49.5	7.0	2.6	0.18	16	0 36.7	12 16 27.89	6 9 49.6	13.3	5.0	0.33
Aug. 1	1 14.2	9 56 36.82	+13 55 23.2	7.0	2.6	0.18	17	0 30.2	12 13 50.95	-5 47 0.7	13.4	5.0	0.34
2	1 16.7	10 3 7.36	13 14 32.1	7.1	2.7	0.19	18	0 23.3	12 10 55.66	5 20 10.5	13.5	5.0	0.34
3	1 19.1	10 9 28.99	12 33 21.1	7.1	2.7	0.19	19	0 16.1	12 7 44.71	4 49 32.5	13.6	5.1	0.34
4	1 21.4	10 15 41.94	11 51 54.8	7.2	2.7	0.19	20	0 8.8	12 4 21.54	4 15 28.3	13.6	5.1	0.34
5	1 23.5	10 21 46.43	11 10 17.0	7.3	2.8	0.19	21	0 1.4	12 0 50.22	3 38 27.5	13.5	5.1	0.34
6	1 25.5	10 27 42.67	+10 28 31.8	7.3	2.8	0.19	22	23 53.9	11 57 15.51	-2 59 8.2	13.5	5.1	0.34
7	1 27.3	10 33 30.84	9 46 43.3	7.4	2.9	0.19	23	23 46.4	11 53 42.60	2 18 15.5	13.4	5.1	0.34
8	1 29.0	10 39 11.10	9 4 55.3	7.5	2.9	0.19	24	23 39.1	11 50 16.98	1 36 39.9	13.3	5.1	0.34
9	1 30.6	10 44 43.64	8 23 11.0	7.6	2.9	0.19	25	23 32.0	11 47 4.17	0 55 15.6	13.1	5.0	0.33
10	1 32.1	10 50 8.61	7 41 33.8	7.7	2.9	0.19	26	23 25.2	11 44 9.50	-0 14 58.2	13.0	4.9	0.33
11	1 33.5	10 55 26.11	+ 7 0 6.9	7.8	2.9	0.19	27	23 18.7	11 41 38.02	+0 23 18.5	12.8	4.9	0.32
12	1 34.7	11 0 36.26	6 18 53.5	7.9	3.0	0.20	28	23 12.7	11 39 34.04	0 58 44.9	12.5	4.8	0.32
13	1 35.8	11 5 39.14	5 37 56.7	7.9	3.0	0.20	29	23 7.2	11 38 1.16	1 30 36.8	12.2	4.6	0.31
14	1 36.8	11 10 34.79	4 57 19.6	8.0	3.0	0.20	30	23 2.2	11 37 2.11	1 58 17.9	11.9	4.5	0.30
15	1 37.7	11 15 23.24	4 17 5.2	8.1	3.0	0.20	31	22 57.9	11 36 38.66	2 21 19.6	11.6	4.3	0.29
16	1 38.4	11 20 4.46	+ 3 37 16.5	8.2	3.1	0.20	1	22 54.3	11 36 51.75	+2 39 21.9	11.2	4.2	0.29
17	1 39.0	11 24 38.44	+ 2 57 56.8	8.4	3.1	0.21	2	22 51.2	11 37 41.42	+2 52 13.1	10.9	4.1	0.28

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
Oct. 1	22 51.2	11 37 41.42	+ 2 52 13.1	10.9	4.1	0.28	Nov. 17	0 7.0	15 55 5.98	-21 21 46.7	6.1	2.3	0.17
2	22 48.7	11 39 6.97	2 59 48.8	10.5	4.0	0.27	18	0 9.5	16 1 35.65	21 46 31.5	6.2	2.3	0.17
3	22 46.7	11 41 7.03	3 2 11.4	10.2	3.9	0.26	19	0 12.1	16 8 6.76	22 10 11.5	6.2	2.3	0.17
4	22 45.3	11 43 39.69	2 59 29.1	9.9	3.7	0.25	20	0 14.8	16 14 39.32	22 32 45.4	6.2	2.3	0.17
5	22 44.4	11 46 42.69	2 51 54.2	9.6	3.6	0.25	21	0 17.4	16 21 13.30	22 54 11.6	6.2	2.3	0.17
6	22 44.0	11 50 13.48	+ 2 39 43.4	9.3	3.5	0.24	22	0 20.0	16 27 48.68	-23 14 28.6	6.2	2.3	0.17
7	22 44.0	11 54 9.32	2 23 16.0	9.0	3.4	0.23	23	0 22.7	16 34 25.41	23 33 35.3	6.3	2.4	0.17
8	22 44.4	11 58 27.46	2 2 52.8	8.8	3.3	0.22	24	0 25.4	16 41 3.43	23 51 30.1	6.3	2.4	0.17
9	22 45.1	12 3 5.25	1 38 55.7	8.5	3.2	0.22	25	0 28.1	16 47 42.66	24 8 11.4	6.3	2.4	0.18
10	22 46.1	12 8 0.07	1 11 47.2	8.3	3.2	0.21	26	0 30.8	16 54 23.00	24 23 37.8	6.4	2.4	0.18
11	22 47.3	12 13 9.49	+ 0 41 49.3	8.1	3.1	0.21	27	0 33.6	17 1 4.32	-24 37 47.9	6.4	2.4	0.18
12	22 48.6	12 18 31.29	+ 0 9 23.4	7.9	3.0	0.20	28	0 36.3	17 7 46.48	24 50 40.3	6.4	2.4	0.18
13	22 50.2	12 24 3.47	- 0 25 10.4	7.8	3.0	0.20	29	0 39.0	17 14 29.31	25 2 13.6	6.5	2.5	0.18
14	22 52.0	12 29 44.27	1 1 33.1	7.6	2.9	0.19	30	0 41.8	17 21 12.60	25 12 26.5	6.5	2.5	0.18
15	22 53.8	12 35 32.13	1 39 27.0	7.5	2.8	0.19	Dec. 1	0 44.6	17 27 56.09	25 21 17.4	6.6	2.5	0.18
16	22 55.7	12 41 25.72	- 2 18 35.9	7.3	2.8	0.18	2	0 47.3	17 34 39.54	-25 28 45.0	6.6	2.5	0.18
17	22 57.7	12 47 23.90	2 58 45.1	7.2	2.7	0.18	3	0 50.1	17 41 22.63	25 34 48.4	6.7	2.5	0.18
18	22 59.8	12 53 25.74	3 39 41.4	7.1	2.7	0.18	4	0 52.9	17 48 5.01	25 39 26.4	6.7	2.6	0.18
19	23 2.0	12 59 30.44	4 21 13.6	7.0	2.6	0.18	5	0 55.6	17 54 46.27	25 42 38.1	6.8	2.6	0.18
20	23 4.1	13 5 37.32	5 3 10.4	6.9	2.6	0.17	6	0 58.3	18 1 25.94	25 44 22.2	6.9	2.6	0.19
21	23 6.3	13 11 45.89	- 5 45 23.1	6.8	2.6	0.17	7	1 1.0	18 8 3.51	-25 44 38.2	7.0	2.6	0.19
22	23 8.5	13 17 55.71	6 27 43.3	6.7	2.5	0.17	8	1 3.6	18 14 38.40	25 43 25.7	7.1	2.7	0.19
23	23 10.8	13 24 6.46	7 10 3.5	6.6	2.5	0.17	9	1 6.2	18 21 9.94	25 40 44.1	7.2	2.7	0.20
24	23 13.1	13 30 17.91	7 52 17.4	6.6	2.5	0.17	10	1 8.7	18 27 37.34	25 36 33.7	7.3	2.7	0.20
25	23 15.3	13 36 29.88	8 34 19.2	6.5	2.4	0.17	11	1 11.1	18 33 59.76	25 30 54.7	7.4	2.8	0.21
26	23 17.6	13 42 42.24	- 9 16 4.1	6.5	2.4	0.16	12	1 13.4	18 40 16.26	-25 23 47.6	7.5	2.8	0.21
27	23 19.8	13 48 54.90	9 57 27.5	6.4	2.4	0.16	13	1 15.6	18 46 25.73	25 15 14.0	7.6	2.9	0.21
28	23 22.1	13 55 7.81	10 38 25.4	6.4	2.4	0.16	14	1 17.7	18 52 26.90	25 5 15.9	7.8	2.9	0.22
29	23 24.4	14 1 20.98	11 18 54.2	6.4	2.4	0.16	15	1 19.6	18 58 18.37	24 53 55.2	7.9	3.0	0.22
30	23 26.7	14 7 34.42	11 58 51.2	6.3	2.4	0.16	16	1 21.4	19 3 58.55	24 41 15.4	8.1	3.0	0.23
31	23 28.9	14 13 48.14	-12 38 12.8	6.3	2.4	0.16	17	1 22.9	19 9 25.67	-24 27 20.7	8.2	3.1	0.23
Nov. 1	23 31.2	14 20 2.20	13 16 57.0	6.2	2.4	0.16	18	1 24.2	19 14 37.69	24 12 16.0	8.4	3.2	0.23
2	23 33.5	14 26 16.68	13 55 1.3	6.2	2.4	0.16	19	1 25.1	19 19 32.36	23 56 7.5	8.6	3.2	0.24
3	23 35.8	14 32 31.64	14 32 23.8	6.2	2.3	0.16	20	1 25.7	19 24 7.18	23 39 2.9	8.8	3.3	0.24
4	23 38.1	14 38 47.16	15 9 2.4	6.2	2.3	0.16	21	1 26.0	19 28 19.40	23 21 10.6	9.1	3.4	0.25
5	23 40.4	14 45 3.30	-15 44 55.0	6.2	2.3	0.16	22	1 25.8	19 32 5.95	-23 2 41.2	9.3	3.5	0.25
6	23 42.8	14 51 20.16	16 20 0.2	6.1	2.3	0.16	23	1 25.1	19 35 23.61	22 43 46.1	9.6	3.6	0.26
7	23 45.1	14 57 37.84	16 54 16.4	6.1	2.3	0.16	24	1 23.9	19 38 8.96	22 24 38.2	9.8	3.7	0.27
8	23 47.5	15 3 56.40	17 27 41.9	6.1	2.3	0.16	25	1 22.2	19 40 18.37	22 5 31.7	10.1	3.8	0.27
9	23 49.8	15 10 15.94	18 0 15.2	6.1	2.3	0.16	26	1 19.8	19 41 48.28	21 46 41.9	10.4	3.9	0.28
10	23 52.2	15 16 36.54	-18 31 54.8	6.1	2.3	0.16	27	1 16.7	19 42 35.37	-21 28 24.0	10.7	4.0	0.29
11	23 54.6	15 22 58.26	19 2 39.2	6.1	2.3	0.16	28	1 12.7	19 42 36.60	21 10 53.7	11.0	4.2	0.30
12	23 57.1	15 29 21.18	19 32 27.1	6.1	2.3	0.16	29	1 8.0	19 41 49.63	20 54 26.0	11.3	4.3	0.31
13	23 59.5	15 35 45.36	20 1 17.2	6.1	2.3	0.16	30	1 2.4	19 40 13.15	20 39 14.2	11.7	4.4	0.31
15	0 2.0	15 42 10.86	20 29 8.1	6.1	2.3	0.17	31	0 56.1	19 37 47.19	20 25 29.5	12.0	4.5	0.32
16	0 4.5	15 48 37.72	-20 55 58.4	6.1	2.3	0.17	32	0 48.9	19 34 33.38	-20 13 20.1	12.3	4.6	0.33
17	0 7.0	15 55 5.98	-21 21 46.7	6.1	2.3	0.17	33	0 41.0	19 30 35.37	-20 2 51.7	12.5	4.7	0.34

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
Jan. 0	2 59.8	21 42 48.26	15 36 4.6	8.6	8.3	0.57	Feb. 15	3 5.2	0 49 26.89	+ 6 59 22.1	12.6	12.2	0.81
1	3 0.4	21 47 23.14	15 10 37.2	8.6	8.3	0.58	16	3 4.8	0 53 1.06	7 28 34.3	12.7	12.3	0.83
2	3 1.0	21 51 56.41	14 44 47.6	8.7	8.4	0.58	17	3 4.4	0 56 33.89	7 57 34.5	12.9	12.5	0.84
3	3 1.6	21 56 28.10	14 18 36.8	8.7	8.4	0.58	18	3 4.0	1 0 5.34	8 26 21.9	13.0	12.6	0.85
4	3 2.2	22 0 58.21	13 52 5.4	8.8	8.5	0.59	19	3 3.6	1 3 35.39	8 54 56.1	13.2	12.7	0.86
5	3 2.7	22 5 26.73	13 25 14.2	8.9	8.6	0.59	20	3 3.1	1 7 3.98	+ 9 23 16.3	13.3	12.9	0.87
6	3 3.2	22 9 53.73	12 58 4.1	8.9	8.6	0.59	21	3 2.6	1 10 31.08	9 51 21.8	13.5	13.0	0.88
7	3 3.7	22 14 19.15	12 30 35.8	9.0	8.7	0.59	22	3 2.0	1 13 56.66	10 19 12.2	13.6	13.2	0.89
8	3 4.2	22 18 43.05	12 2 50.2	9.0	8.7	0.60	23	3 1.5	1 17 20.66	10 46 46.7	13.8	13.3	0.90
9	3 4.6	22 23 5.42	11 34 48.3	9.1	8.8	0.60	24	3 0.9	1 20 43.04	11 14 4.8	13.9	13.5	0.91
10	3 5.0	22 27 26.28	11 6 30.8	9.2	8.9	0.60	25	3 0.3	1 24 3.73	+11 41 5.8	14.1	13.6	0.92
11	3 5.4	22 31 45.66	10 37 58.5	9.2	8.9	0.60	26	2 59.7	1 27 22.66	12 7 49.0	14.3	13.8	0.94
12	3 5.8	22 36 3.55	10 9 12.1	9.3	9.0	0.61	27	2 59.1	1 30 39.78	12 34 13.6	14.5	14.0	0.95
13	3 6.1	22 40 19.98	9 40 12.6	9.3	9.0	0.61	28	2 58.4	1 33 55.01	13 0 19.2	14.6	14.1	0.96
14	3 6.4	22 44 34.95	9 11 0.6	9.4	9.1	0.61	Mar. 1	2 57.6	1 37 8.27	13 26 5.0	14.8	14.3	0.98
15	3 6.7	22 48 48.51	8 41 36.9	9.5	9.2	0.62	2	2 56.8	1 40 19.46	+13 51 30.3	15.0	14.5	0.99
16	3 6.9	22 53 0.65	8 12 2.4	9.6	9.3	0.62	3	2 56.0	1 43 28.50	14 16 34.4	15.2	14.7	1.00
17	3 7.1	22 57 11.39	7 42 17.8	9.7	9.3	0.62	4	2 55.2	1 46 35.27	14 41 16.5	15.4	14.9	1.02
18	3 7.3	23 1 20.77	7 12 23.8	9.8	9.4	0.63	5	2 54.4	1 49 39.64	15 5 36.0	15.6	15.1	1.03
19	3 7.5	23 5 28.80	6 42 21.1	9.9	9.5	0.63	6	2 53.5	1 52 41.50	15 29 32.0	15.8	15.3	1.05
20	3 7.7	23 9 35.51	6 12 10.6	9.9	9.6	0.64	7	2 52.6	1 55 40.72	+15 53 3.8	16.0	15.5	1.07
21	3 7.8	23 13 40.90	5 41 52.9	10.0	9.6	0.64	8	2 51.6	1 58 37.19	16 16 10.7	16.2	15.7	1.08
22	3 8.0	23 17 45.00	5 11 28.7	10.1	9.7	0.65	9	2 50.5	2 1 30.76	16 38 51.9	16.4	15.9	1.10
23	3 8.1	23 21 47.84	4 40 58.7	10.2	9.8	0.65	10	2 49.3	2 4 21.27	17 1 6.6	16.7	16.2	1.11
24	3 8.2	23 25 49.43	4 10 23.8	10.3	9.8	0.66	11	2 48.1	2 7 8.55	17 22 54.0	16.9	16.4	1.13
25	3 8.3	23 29 49.80	3 39 44.6	10.3	9.9	0.67	12	2 46.9	2 9 52.44	+17 44 13.3	17.1	16.6	1.15
26	3 8.4	23 33 48.94	3 9 1.7	10.4	10.0	0.67	13	2 45.7	2 12 32.78	18 5 3.7	17.4	16.8	1.17
27	3 8.4	23 37 46.89	2 38 15.9	10.5	10.1	0.68	14	2 44.4	2 15 9.39	18 25 24.3	17.6	17.1	1.19
28	3 8.4	23 41 43.66	2 7 27.9	10.6	10.2	0.68	15	2 43.0	2 17 42.08	18 45 14.2	17.9	17.3	1.21
29	3 8.4	23 45 39.26	1 36 38.5	10.7	10.3	0.69	16	2 41.6	2 20 10.64	19 4 32.7	18.1	17.6	1.23
30	3 8.3	23 49 33.69	1 5 48.4	10.8	10.4	0.70	17	2 40.1	2 22 34.88	+19 23 18.9	18.4	17.8	1.25
31	3 8.3	23 53 26.97	0 34 58.2	10.9	10.5	0.70	18	2 38.5	2 24 54.59	19 41 31.8	18.7	18.1	1.27
Feb. 1	3 8.2	23 57 19.10	0 4 8.7	11.0	10.6	0.71	19	2 36.8	2 27 9.56	19 59 10.4	19.0	18.3	1.29
2	3 8.1	0 1 10.12	+ 0 26 39.3	11.1	10.7	0.71	20	2 35.0	2 29 19.58	20 16 13.8	19.3	18.6	1.32
3	3 8.0	0 4 59.99	0 57 25.2	11.2	10.8	0.72	21	2 33.2	2 31 24.43	20 32 40.9	19.6	18.9	1.34
4	3 7.9	0 8 48.70	+ 1 28 8.1	11.3	10.9	0.73	22	2 31.2	2 33 23.87	+20 48 30.6	19.9	19.2	1.36
5	3 7.8	0 12 36.29	1 58 47.4	11.4	11.0	0.73	23	2 29.2	2 35 17.67	21 3 42.0	20.2	19.5	1.38
6	3 7.6	0 16 22.72	2 29 22.4	11.5	11.1	0.74	24	2 27.0	2 37 5.58	21 18 13.6	20.5	19.8	1.41
7	3 7.4	0 20 7.98	2 59 52.2	11.6	11.2	0.75	25	2 24.7	2 38 47.36	21 32 4.1	20.9	20.2	1.43
8	3 7.2	0 23 52.08	3 30 16.3	11.8	11.3	0.75	26	2 22.4	2 40 22.74	21 45 12.3	21.2	20.5	1.46
9	3 7.0	0 27 35.01	+ 4 0 33.9	11.9	11.4	0.76	27	2 20.0	2 41 51.46	+21 57 36.9	21.5	20.8	1.48
10	3 6.7	0 31 16.74	4 30 44.2	12.0	11.6	0.77	28	2 17.4	2 43 13.27	22 9 16.4	21.9	21.2	1.51
11	3 6.4	0 34 57.27	5 0 46.5	12.1	11.7	0.78	29	2 14.6	2 44 27.92	22 20 9.0	22.2	21.5	1.53
12	3 6.1	0 38 36.57	5 30 40.1	12.2	11.8	0.78	30	2 11.8	2 45 35.14	22 30 13.1	22.6	21.8	1.56
13	3 5.8	0 42 14.62	6 0 24.4	12.4	11.9	0.79	31	2 8.9	2 46 34.65	22 39 26.8	22.9	22.2	1.59
14	3 5.5	0 45 51.40	+ 6 29 58.6	12.5	12.0	0.80	32	2 5.8	2 47 26.19	+22 47 48.2	23.3	22.5	1.62
15	3 5.2	0 49 26.89	+ 6 59 22.1	12.6	12.2	0.81	33	2 2.5	2 48 9.52	+22 55 15.4	23.7	22.8	1.65

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
Apr. 1	2 5.8	2 47 26.19	+22 47 48.2	23.3	22.5	1.62	May 16	22 10.4	1 52 38.18	+12 31 1.5	26.3	25.4	1.74
2	2 2.5	2 48 9.52	22 55 15.4	23.7	22.8	1.65	17	22 6.4	1 52 38.53	12 17 31.2	25.9	25.1	1.72
3	1 59.2	2 48 44.40	23 1 46.4	24.0	23.2	1.68	18	22 2.6	1 52 47.56	12 5 9.5	25.5	24.7	1.69
4	1 55.8	2 49 10.57	23 7 19.2	24.4	23.5	1.70	19	21 59.0	1 53 5.13	11 53 56.5	25.1	24.3	1.66
5	1 52.1	2 49 27.83	23 11 51.5	24.8	23.9	1.73	20	21 55.5	1 53 31.08	11 43 51.8	24.7	23.9	1.63
6	1 48.3	2 49 35.97	+23 15 21.1	25.2	24.3	1.76	21	21 52.1	1 54 5.23	+11 34 54.7	24.3	23.5	1.60
7	1 44.4	2 49 34.87	23 17 45.5	25.5	24.7	1.78	22	21 48.8	1 54 47.36	11 27 4.5	24.0	23.1	1.58
8	1 40.3	2 49 24.37	23 19 2.3	25.9	25.0	1.81	23	21 45.8	1 55 37.26	11 20 20.0	23.6	22.7	1.55
9	1 36.0	2 49 4.41	23 19 9.2	26.3	25.4	1.83	24	21 42.8	1 56 34.71	11 14 39.7	23.2	22.3	1.53
10	1 31.6	2 48 34.94	23 18 3.8	26.6	25.7	1.86	25	21 39.9	1 57 39.47	11 10 2.1	22.8	22.0	1.50
11	1 27.1	2 47 55.95	+23 15 44.2	27.0	26.1	1.89	26	21 37.3	1 58 51.31	+11 6 25.5	22.4	21.6	1.48
12	1 22.3	2 47 7.50	23 12 8.4	27.4	26.4	1.91	27	21 34.7	2 0 10.00	11 3 48.1	22.1	21.3	1.45
13	1 17.4	2 46 9.74	23 7 14.8	27.7	26.8	1.94	28	21 32.2	2 1 35.31	11 2 8.1	21.7	20.9	1.43
14	1 12.4	2 45 2.87	23 1 1.7	28.1	27.1	1.97	29	21 29.8	2 3 7.00	11 1 23.2	21.4	20.6	1.40
15	1 7.1	2 43 47.18	22 53 27.8	28.5	27.5	1.99	30	21 27.4	2 4 44.85	11 1 31.6	21.0	20.3	1.38
16	1 1.8	2 42 22.99	+22 44 32.0	28.8	27.8	2.01	31	21 25.2	2 6 28.65	+11 2 31.4	20.7	20.0	1.35
17	0 56.4	2 40 50.70	22 34 14.0	29.1	28.1	2.02	June 1	21 23.1	2 8 18.19	11 4 20.4	20.3	19.6	1.33
18	0 50.9	2 39 10.83	22 22 34.0	29.4	28.4	2.04	2	21 21.1	2 10 13.28	11 6 56.7	20.0	19.3	1.31
19	0 45.1	2 37 23.97	22 9 32.9	29.6	28.6	2.06	3	21 19.1	2 12 13.72	11 10 18.2	19.7	19.0	1.29
20	0 39.3	2 35 30.76	21 55 12.0	29.9	28.9	2.07	4	21 17.2	2 14 19.33	11 14 23.0	19.4	18.7	1.27
21	0 33.4	2 33 31.91	+21 39 33.4	30.1	29.1	2.09	5	21 15.4	2 16 29.94	+11 19 9.3	19.1	18.4	1.25
22	0 27.3	2 31 28.17	21 22 39.9	30.3	29.3	2.10	6	21 13.8	2 18 45.35	11 24 35.0	18.8	18.1	1.23
23	0 21.3	2 29 20.38	21 4 34.9	30.5	29.5	2.11	7	21 12.2	2 21 5.45	11 30 38.1	18.5	17.8	1.22
24	0 15.2	2 27 9.40	20 45 22.6	30.6	29.6	2.11	8	21 10.7	2 23 30.06	11 37 16.8	18.2	17.5	1.20
25	0 9.0	2 24 56.13	20 25 8.0	30.7	29.7	2.10	9	21 9.2	2 25 59.05	11 44 29.3	17.9	17.3	1.18
26	0 2.9	2 22 41.48	+20 3 56.6	30.8	29.8	2.10	10	21 7.8	2 28 32.28	+11 52 13.7	17.7	17.0	1.16
26	23 56.7	2 20 26.37	19 41 54.7	30.9	29.9	2.10	11	21 6.5	2 31 9.62	12 0 28.3	17.4	16.8	1.15
27	23 50.5	2 18 11.75	19 19 9.0	30.9	29.9	2.10	12	21 5.2	2 33 50.95	12 9 11.3	17.2	16.5	1.13
28	23 44.4	2 15 58.53	18 55 46.9	30.9	29.8	2.09	13	21 4.1	2 36 36.15	12 18 21.0	16.9	16.3	1.12
29	23 38.3	2 13 47.58	18 31 56.0	30.8	29.8	2.09	14	21 3.0	2 39 25.11	12 27 55.7	16.7	16.1	1.10
30	23 32.2	2 11 39.74	+18 7 44.1	30.8	29.7	2.08	15	21 1.9	2 42 17.74	+12 37 53.6	16.5	15.8	1.09
May 1	23 26.1	2 9 35.82	17 43 19.3	30.7	29.6	2.07	16	21 0.9	2 45 13.92	12 48 13.3	16.2	15.6	1.07
2	23 20.1	2 7 36.59	17 18 49.5	30.5	29.4	2.06	17	20 59.9	2 48 13.56	12 58 53.1	16.0	15.4	1.06
3	23 14.4	2 5 42.76	16 54 22.9	30.3	29.3	2.05	18	20 59.0	2 51 16.56	13 9 51.3	15.7	15.2	1.04
4	23 8.7	2 3 54.98	16 30 7.4	30.1	29.1	2.04	19	20 58.1	2 54 22.84	13 21 6.3	15.5	15.0	1.03
5	23 3.1	2 2 13.81	+16 6 10.5	29.9	28.9	2.02	20	20 57.3	2 57 32.30	+13 32 36.5	15.3	14.8	1.02
6	22 57.6	2 0 39.78	15 42 39.3	29.6	28.7	2.00	21	20 56.6	3 0 44.87	13 44 20.6	15.1	14.6	1.00
7	22 52.3	1 59 13.33	15 19 40.6	29.4	28.4	1.97	22	20 56.0	3 4 0.46	13 56 17.0	14.9	14.4	0.99
8	22 47.1	1 57 54.83	14 57 20.5	29.1	28.1	1.95	23	20 55.4	3 7 18.98	14 8 24.4	14.7	14.2	0.98
9	22 42.1	1 56 44.59	14 35 44.5	28.8	27.8	1.93	24	20 54.8	3 10 40.36	14 20 41.2	14.5	14.0	0.97
10	22 37.1	1 55 42.83	+14 14 57.8	28.5	27.5	1.90	25	20 54.2	3 14 4.54	+14 33 6.1	14.3	13.8	0.96
11	22 32.2	1 54 49.79	13 55 4.9	28.2	27.2	1.88	26	20 53.7	3 17 31.43	14 45 37.8	14.1	13.6	0.94
12	22 27.6	1 54 5.59	13 36 9.8	27.8	26.9	1.85	27	20 53.3	3 21 0.97	14 58 14.8	13.9	13.5	0.93
13	22 23.1	1 53 30.30	13 18 15.6	27.5	26.5	1.82	28	20 52.9	3 24 33.10	15 10 56.0	13.8	13.3	0.92
14	22 18.7	1 53 3.99	13 1 24.9	27.1	26.2	1.79	29	20 52.5	3 28 7.76	15 23 40.2	13.6	13.2	0.91
15	22 14.4	1 52 46.63	+12 45 39.7	26.7	25.8	1.76	30	20 52.2	3 31 44.91	+15 36 26.1	13.4	13.0	0.90
16	22 10.4	1 52 38.18	+12 31 1.5	26.3	25.4	1.74	31	20 51.9	3 35 24.48	+15 49 12.5	13.3	12.9	0.89

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
July	h m	h m s	° ' "	"	"	s	Aug. 16	h m	h m s	° ' "	"	"	s
1	20 51.9	3 35 24.48	+15 49 12.5	13.3	12.9	0.89	16	21 11.8	6 56 42.04	+21 13 34.1	8.7	8.4	0.60
2	20 51.6	3 39 6.43	16 1 58.3	13.1	12.7	0.88	17	21 12.7	7 1 32.39	21 10 25.1	8.6	8.3	0.60
3	20 51.4	3 42 50.72	16 14 42.3	13.0	12.6	0.87	18	21 13.6	7 6 23.21	21 6 42.9	8.5	8.2	0.59
4	20 51.3	3 46 37.31	16 27 23.5	12.8	12.4	0.86	19	21 14.5	7 11 14.44	21 2 27.2	8.5	8.2	0.59
5	20 51.2	3 50 26.15	16 40 0.8	12.6	12.3	0.85	20	21 15.4	7 16 6.02	20 57 38.1	8.4	8.1	0.58
6	20 51.1	3 54 17.20	+16 52 33.0	12.5	12.1	0.84	21	21 16.3	7 20 57.89	+20 52 15.5	8.4	8.1	0.58
7	20 51.1	3 58 10.45	17 4 59.1	12.3	12.0	0.84	22	21 17.2	7 25 49.99	20 46 19.2	8.3	8.0	0.57
8	20 51.1	4 2 5.85	17 17 18.3	12.2	11.8	0.83	23	21 18.1	7 30 42.29	20 39 49.3	8.3	8.0	0.57
9	20 51.1	4 6 3.37	17 29 29.3	12.1	11.7	0.82	24	21 19.1	7 35 34.74	20 32 45.8	8.2	7.9	0.57
10	20 51.2	4 10 2.97	17 41 31.2	12.0	11.6	0.81	25	21 20.0	7 40 27.29	20 25 8.7	8.2	7.9	0.56
11	20 51.2	4 14 4.65	+17 53 23.1	11.8	11.5	0.80	26	21 20.9	7 45 19.88	+20 16 58.1	8.1	7.8	0.56
12	20 51.3	4 18 8.35	18 5 4.0	11.7	11.3	0.80	27	21 21.8	7 50 12.48	20 8 14.0	8.1	7.7	0.55
13	20 51.4	4 22 14.05	18 16 32.9	11.6	11.2	0.79	28	21 22.8	7 55 5.03	19 58 56.5	8.0	7.7	0.55
14	20 51.6	4 26 21.73	18 27 48.9	11.5	11.1	0.78	29	21 23.8	7 59 57.49	19 49 5.9	8.0	7.6	0.55
15	20 51.9	4 30 31.34	18 38 50.9	11.4	11.0	0.77	30	21 24.7	8 4 49.82	19 38 42.4	7.9	7.6	0.54
16	20 52.1	4 34 42.85	+18 49 38.1	11.2	10.9	0.77	31	21 25.7	8 9 42.00	+19 27 46.1	7.9	7.5	0.54
17	20 52.4	4 38 56.23	19 0 9.7	11.1	10.8	0.76	Sept. 1	21 26.6	8 14 33.97	19 16 17.1	7.8	7.5	0.53
18	20 52.7	4 43 11.44	19 10 24.7	11.0	10.7	0.75	2	21 27.5	8 19 25.69	19 4 15.7	7.8	7.5	0.53
19	20 53.1	4 47 28.45	19 20 22.1	10.9	10.6	0.75	3	21 28.4	8 24 17.14	18 51 42.2	7.7	7.4	0.53
20	20 53.4	4 51 47.23	19 30 1.3	10.8	10.5	0.74	4	21 29.3	8 29 8.29	18 38 36.8	7.7	7.4	0.52
21	20 53.8	4 56 7.73	+19 39 21.3	10.7	10.4	0.74	5	21 30.2	8 33 59.12	+18 24 59.7	7.6	7.4	0.52
22	20 54.2	5 0 29.90	19 48 21.4	10.6	10.3	0.73	6	21 31.1	8 38 49.58	18 10 51.3	7.6	7.3	0.51
23	20 54.6	5 4 53.71	19 57 0.8	10.5	10.2	0.72	7	21 32.0	8 43 39.67	17 56 11.9	7.5	7.3	0.51
24	20 55.1	5 9 19.13	20 5 18.7	10.4	10.1	0.72	8	21 32.9	8 48 29.35	17 41 1.8	7.5	7.3	0.51
25	20 55.6	5 13 46.09	20 13 14.3	10.3	10.0	0.71	9	21 33.7	8 53 18.61	17 25 21.5	7.4	7.2	0.50
26	20 56.1	5 18 14.54	+20 20 46.9	10.2	9.9	0.70	10	21 34.6	8 58 7.42	+17 9 11.2	7.4	7.2	0.50
27	20 56.7	5 22 44.46	20 27 55.8	10.2	9.8	0.70	11	21 35.5	9 2 55.78	16 52 31.3	7.3	7.1	0.49
28	20 57.3	5 27 15.80	20 34 40.4	10.1	9.7	0.69	12	21 36.4	9 7 43.67	16 35 22.2	7.3	7.1	0.49
29	20 57.9	5 31 48.51	20 41 0.0	10.0	9.6	0.69	13	21 37.2	9 12 31.06	16 17 44.3	7.3	7.1	0.49
30	20 58.5	5 36 22.56	20 46 54.0	9.9	9.5	0.68	14	21 38.1	9 17 17.95	15 59 38.1	7.2	7.0	0.48
31	20 59.2	5 40 57.89	+20 52 21.8	9.8	9.4	0.67	15	21 38.9	9 22 4.31	+15 41 4.1	7.2	7.0	0.48
Aug. 1	20 59.9	5 45 34.47	20 57 22.8	9.8	9.4	0.67	16	21 39.7	9 26 50.15	15 22 2.9	7.2	6.9	0.48
2	21 0.6	5 50 12.25	21 1 56.5	9.7	9.3	0.66	17	21 40.5	9 31 35.46	15 2 34.9	7.1	6.9	0.48
3	21 1.3	5 54 51.19	21 6 2.3	9.6	9.2	0.66	18	21 41.3	9 36 20.23	14 42 40.6	7.1	6.9	0.47
4	21 2.0	5 59 31.23	21 9 39.7	9.5	9.2	0.65	19	21 42.2	9 41 4.44	14 22 20.6	7.1	6.8	0.47
5	21 2.8	6 4 12.33	+21 12 48.2	9.4	9.1	0.65	20	21 43.0	9 45 48.10	+14 1 35.3	7.0	6.8	0.47
6	21 3.6	6 8 54.46	21 15 27.3	9.4	9.0	0.64	21	21 43.8	9 50 31.19	13 40 25.3	7.0	6.8	0.46
7	21 4.3	6 13 37.56	21 17 36.6	9.3	8.9	0.64	22	21 44.5	9 55 13.71	13 18 51.2	7.0	6.7	0.46
8	21 5.1	6 18 21.59	21 19 15.7	9.2	8.9	0.64	23	21 45.2	9 59 55.66	12 56 53.7	6.9	6.7	0.46
9	21 5.9	6 23 6.51	21 20 24.1	9.1	8.8	0.63	24	21 45.9	10 4 37.06	12 34 33.3	6.9	6.7	0.46
10	21 6.7	6 27 52.27	+21 21 1.4	9.1	8.7	0.63	25	21 46.6	10 9 17.89	+12 11 50.5	6.9	6.6	0.45
11	21 7.5	6 32 38.84	21 21 7.3	9.0	8.7	0.62	26	21 47.3	10 13 58.17	11 48 46.1	6.8	6.6	0.45
12	21 8.3	6 37 26.17	21 20 41.4	9.0	8.6	0.62	27	21 48.0	10 18 37.91	11 25 20.8	6.8	6.6	0.45
13	21 9.1	6 42 14.21	21 19 43.4	8.9	8.6	0.61	28	21 48.7	10 23 17.11	11 1 35.1	6.8	6.5	0.45
14	21 10.0	6 47 2.90	21 18 13.0	8.8	8.5	0.61	29	21 49.4	10 27 55.77	10 37 29.5	6.8	6.5	0.44
15	21 10.9	6 51 52.19	+21 16 10.0	8.8	8.4	0.61	30	21 50.1	10 32 33.92	+10 13 4.8	6.7	6.5	0.44
16	21 11.8	6 56 42.04	+21 13 34.1	8.7	8.4	0.60	31	21 50.8	10 37 11.56	+9 48 21.5	6.7	6.4	0.44

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
Oct. 1	21 50.8	10 37 11.56+	9 48 21.5	6.7	6.4	0.44	Nov. 16	22 21.2	14 8 58.41	11 25 39.1	5.7	5.6	0.38
2	21 51.5	10 41 48.72	9 23 20.3	6.6	6.4	0.43	17	22 22.0	14 13 45.58	11 51 44.2	5.7	5.5	0.38
3	21 52.2	10 46 25.42	8 58 1.9	6.6	6.4	0.43	18	22 22.9	14 18 33.76	12 17 32.7	5.7	5.5	0.38
4	21 52.9	10 51 1.68	8 32 26.8	6.6	6.4	0.43	19	22 23.8	14 23 22.96	12 43 4.4	5.7	5.5	0.38
5	21 53.5	10 55 37.52	8 6 35.8	6.6	6.3	0.43	20	22 24.7	14 28 13.20	13 8 17.9	5.7	5.5	0.38
6	21 54.2	11 0 12.96+	7 40 29.4	6.6	6.3	0.43	21	22 25.6	14 33 4.51	13 33 12.4	5.7	5.5	0.38
7	21 54.8	11 4 48.02	7 14 8.3	6.5	6.3	0.42	22	22 26.5	14 37 56.91	13 57 47.3	5.7	5.5	0.38
8	21 55.5	11 9 22.73	6 47 33.3	6.5	6.3	0.42	23	22 27.4	14 42 50.41	14 22 1.6	5.6	5.5	0.38
9	21 56.1	11 13 57.12	6 20 44.9	6.5	6.3	0.42	24	22 28.4	14 47 45.01	14 45 54.5	5.6	5.5	0.38
10	21 56.7	11 18 31.22	5 53 43.7	6.5	6.2	0.42	25	22 29.4	14 52 40.73	15 9 25.3	5.6	5.4	0.38
11	21 57.3	11 23 5.08+	5 26 30.5	6.4	6.2	0.42	26	22 30.4	14 57 37.60	15 32 33.2	5.6	5.4	0.38
12	21 57.9	11 27 38.69	4 59 6.0	6.4	6.2	0.41	27	22 31.4	15 2 35.63	15 55 17.3	5.6	5.4	0.38
13	21 58.5	11 32 12.09	4 31 30.7	6.4	6.2	0.41	28	22 32.4	15 7 34.83	16 17 36.7	5.6	5.4	0.38
14	21 59.1	11 36 45.32	4 3 45.5	6.4	6.2	0.41	29	22 33.4	15 12 35.20	16 39 30.8	5.6	5.4	0.38
15	21 59.7	11 41 18.41	3 35 50.9	6.3	6.1	0.41	30	22 34.5	15 17 36.75	17 0 58.9	5.6	5.4	0.38
16	22 0.3	11 45 51.39+	3 7 47.7	6.3	6.1	0.41	Dec. 1	22 35.6	15 22 39.48	17 22 0.1	5.6	5.4	0.38
17	22 0.9	11 50 24.29	2 39 36.6	6.3	6.1	0.40	2	22 36.8	15 27 43.40	17 42 33.7	5.6	5.4	0.38
18	22 1.5	11 54 57.14	2 11 18.4	6.3	6.1	0.40	3	22 38.0	15 32 48.53	18 2 38.8	5.5	5.4	0.37
19	22 2.2	11 59 29.96	1 42 53.8	6.3	6.1	0.40	4	22 39.2	15 37 54.87	18 22 14.7	5.5	5.3	0.37
20	22 2.8	12 4 2.79	1 14 23.6	6.2	6.0	0.40	5	22 40.4	15 43 2.38	18 41 20.6	5.5	5.3	0.37
21	22 3.4	12 8 35.66+	0 45 48.5	6.2	6.0	0.40	6	22 41.6	15 48 11.08	18 59 55.8	5.5	5.3	0.37
22	22 4.0	12 13 8.61+	0 17 9.1	6.2	6.0	0.40	7	22 42.8	15 53 20.96	19 17 59.6	5.5	5.3	0.37
23	22 4.6	12 17 41.67	0 11 33.8	6.2	6.0	0.40	8	22 44.0	15 58 32.01	19 35 31.3	5.5	5.3	0.37
24	22 5.2	12 22 14.89	0 40 19.4	6.1	6.0	0.40	9	22 45.2	16 3 44.23	19 52 30.2	5.5	5.3	0.37
25	22 5.8	12 26 48.27	1 9 7.0	6.1	5.9	0.39	10	22 46.5	16 8 57.60	20 8 55.6	5.5	5.3	0.37
26	22 6.4	12 31 21.86	1 37 55.8	6.1	5.9	0.39	11	22 47.8	16 14 12.10	20 24 46.7	5.5	5.3	0.37
27	22 7.0	12 35 55.69	2 6 45.1	6.1	5.9	0.39	12	22 49.1	16 19 27.71	20 40 2.9	5.5	5.3	0.37
28	22 7.6	12 40 29.79	2 35 34.1	6.1	5.9	0.39	13	22 50.4	16 24 44.41	20 54 43.5	5.4	5.3	0.37
29	22 8.2	12 45 4.20	3 4 22.2	6.0	5.9	0.39	14	22 51.8	16 30 2.17	21 8 47.9	5.4	5.2	0.37
30	22 8.8	12 49 38.95	3 33 8.5	6.0	5.8	0.39	15	22 53.1	16 35 20.96	21 22 15.4	5.4	5.2	0.37
31	22 9.5	12 54 14.10	4 1 52.3	6.0	5.8	0.39	16	22 54.5	16 40 40.75	21 35 5.5	5.4	5.2	0.37
Nov. 1	22 10.1	12 58 49.67	4 30 32.8	6.0	5.8	0.39	17	22 55.9	16 46 1.51	21 47 17.4	5.4	5.2	0.37
2	22 10.8	13 3 25.69	4 59 9.4	6.0	5.8	0.39	18	22 57.3	16 51 23.19	21 58 50.7	5.4	5.2	0.37
3	22 11.5	13 8 2.20	5 27 41.2	6.0	5.8	0.39	19	22 58.7	16 56 45.76	22 9 44.9	5.4	5.2	0.37
4	22 12.2	13 12 39.24	5 56 7.6	5.9	5.7	0.38	20	23 0.2	17 2 9.18	22 19 59.5	5.4	5.2	0.37
5	22 12.9	13 17 16.85	6 24 27.7	5.9	5.7	0.38	21	23 1.6	17 7 33.39	22 29 34.0	5.4	5.2	0.37
6	22 13.5	13 21 55.07	6 52 40.8	5.9	5.7	0.38	22	23 3.1	17 12 58.35	22 38 27.9	5.4	5.2	0.37
7	22 14.2	13 26 33.93	7 20 46.2	5.9	5.7	0.38	23	23 4.6	17 18 24.01	22 46 40.8	5.4	5.2	0.37
8	22 14.9	13 31 13.47	7 48 43.1	5.9	5.7	0.38	24	23 6.1	17 23 50.31	22 54 12.1	5.4	5.2	0.37
9	22 15.7	13 35 53.73	8 16 30.7	5.9	5.6	0.38	25	23 7.6	17 29 17.20	23 1 1.5	5.4	5.2	0.37
10	22 16.5	13 40 34.73	8 44 8.3	5.8	5.6	0.38	26	23 9.1	17 34 44.60	23 7 8.8	5.3	5.2	0.37
11	22 17.3	13 45 16.52	9 11 35.1	5.8	5.6	0.38	27	23 10.6	17 40 12.47	23 12 33.7	5.3	5.2	0.37
12	22 18.1	13 49 59.14	9 38 50.3	5.8	5.6	0.38	28	23 12.1	17 45 40.75	23 17 15.9	5.3	5.1	0.37
13	22 18.9	13 54 42.61	10 5 53.1	5.8	5.6	0.38	29	23 13.6	17 51 9.39	23 21 15.2	5.3	5.1	0.37
14	22 19.6	13 59 26.96	10 32 42.7	5.8	5.6	0.38	30	23 15.2	17 56 38.33	23 24 31.2	5.3	5.1	0.37
15	22 20.4	14 4 12.22	10 59 18.3	5.8	5.6	0.38	31	23 16.7	18 2 7.50	23 27 3.8	5.3	5.1	0.37
16	22 21.2	14 8 58.41	11 25 39.1	5.7	5.6	0.38	32	23 18.3	18 7 36.84	23 28 53.0	5.3	5.1	0.37

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T.of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T.of Sem. Pass. Mer.
	h m	h m s	" "	"	"	s		h m	h m s	" "	"	"	s
Jan. 0	10 1.0	4 45 7.66	+25 23 4.3	14.0	7.9	0.59	Feb. 14	7 18.5	4 59 33.92	+25 25 14.3	8.9	5.1	0.38
1	9 56.2	4 44 15.18	25 21 51.8	13.9	7.9	0.58	15	7 15.8	5 0 52.91	25 26 17.4	8.8	5.0	0.37
2	9 51.4	4 43 26.28	25 20 40.7	13.7	7.8	0.58	16	7 13.2	5 2 13.73	25 27 20.4	8.7	5.0	0.37
3	9 46.7	4 42 41.00	25 19 31.6	13.6	7.7	0.57	17	7 10.7	5 3 36.31	25 28 23.1	8.6	4.9	0.37
4	9 42.1	4 41 59.32	25 18 24.6	13.5	7.7	0.57	18	7 8.2	5 5 0.61	25 29 25.4	8.5	4.9	0.36
5	9 37.6	4 41 21.27	+25 17 20.1	13.3	7.6	0.56	19	7 5.7	5 6 26.62	+25 30 27.0	8.4	4.8	0.36
6	9 33.1	4 40 46.86	25 16 18.5	13.2	7.5	0.56	20	7 3.2	5 7 54.28	25 31 27.7	8.4	4.8	0.36
7	9 28.6	4 40 16.11	25 15 20.0	13.1	7.4	0.55	21	7 0.8	5 9 23.56	25 32 27.3	8.3	4.7	0.36
8	9 24.2	4 39 49.00	25 14 24.9	13.0	7.4	0.55	22	6 58.3	5 10 54.43	25 33 25.9	8.2	4.7	0.35
9	9 19.9	4 39 25.54	25 13 33.5	12.8	7.3	0.54	23	6 55.9	5 12 26.85	25 34 23.0	8.2	4.7	0.35
10	9 15.7	4 39 5.68	+25 12 45.9	12.7	7.2	0.54	24	6 53.6	5 14 0.79	+25 35 18.6	8.1	4.6	0.35
11	9 11.4	4 38 49.40	25 12 2.2	12.6	7.2	0.53	25	6 51.2	5 15 36.18	25 36 12.3	8.0	4.6	0.35
12	9 7.3	4 38 36.67	25 11 22.8	12.5	7.1	0.52	26	6 48.9	5 17 13.06	25 37 4.0	8.0	4.6	0.34
13	9 3.2	4 38 27.45	25 10 47.8	12.3	7.0	0.52	27	6 46.6	5 18 51.38	25 37 53.5	7.9	4.5	0.34
14	8 59.2	4 38 21.68	25 10 17.0	12.2	6.9	0.51	28	6 44.3	5 20 31.10	25 38 40.6	7.8	4.5	0.34
15	8 55.2	4 38 19.34	+25 9 50.6	12.1	6.9	0.51	Mar. 1	6 42.1	5 22 12.19	+25 39 25.1	7.8	4.5	0.33
16	8 51.3	4 38 20.38	25 9 28.5	12.0	6.8	0.50	2	6 39.8	5 23 54.61	25 40 6.8	7.7	4.4	0.33
17	8 47.5	4 38 24.74	25 9 11.0	11.9	6.7	0.50	3	6 37.6	5 25 38.32	25 40 45.7	7.6	4.4	0.33
18	8 43.7	4 38 32.37	25 8 58.0	11.7	6.7	0.49	4	6 35.5	5 27 23.31	25 41 21.4	7.6	4.4	0.32
19	8 39.9	4 38 43.23	25 8 49.4	11.6	6.6	0.49	5	6 33.3	5 29 9.55	25 41 53.9	7.5	4.3	0.32
20	8 36.1	4 38 57.26	+25 8 45.0	11.5	6.5	0.48	6	6 31.1	5 30 57.00	+25 42 22.9	7.5	4.3	0.32
21	8 32.5	4 39 14.41	25 8 45.1	11.4	6.5	0.48	7	6 29.0	5 32 45.64	25 42 48.3	7.4	4.3	0.32
22	8 28.9	4 39 34.64	25 8 49.4	11.2	6.4	0.47	8	6 26.9	5 34 35.43	25 43 9.9	7.4	4.2	0.31
23	8 25.4	4 39 57.88	25 8 58.0	11.1	6.3	0.47	9	6 24.8	5 36 26.34	25 43 27.6	7.3	4.2	0.31
24	8 21.9	4 40 24.09	25 9 10.8	11.0	6.3	0.46	10	6 22.7	5 38 18.34	25 43 41.2	7.2	4.2	0.31
25	8 18.5	4 40 53.22	+25 9 27.7	10.9	6.2	0.46	11	6 20.7	5 40 11.39	+25 43 50.6	7.2	4.1	0.30
26	8 15.1	4 41 25.22	25 9 48.5	10.8	6.1	0.45	12	6 18.7	5 42 5.47	25 43 55.6	7.1	4.1	0.30
27	8 11.7	4 42 0.06	25 10 13.0	10.6	6.1	0.45	13	6 16.6	5 44 0.54	25 43 56.0	7.0	4.1	0.30
28	8 8.4	4 42 37.68	25 10 41.2	10.6	6.0	0.44	14	6 14.6	5 45 56.58	25 43 51.6	7.0	4.0	0.30
29	8 5.1	4 43 18.02	25 11 12.9	10.5	6.0	0.44	15	6 12.6	5 47 53.57	25 43 42.5	6.9	4.0	0.29
30	8 1.9	4 44 1.04	+25 11 48.0	10.4	5.9	0.43	16	6 10.7	5 49 51.47	+25 43 28.4	6.9	4.0	0.29
31	7 58.7	4 44 46.70	25 12 26.4	10.3	5.9	0.43	17	6 8.7	5 51 50.26	25 43 9.1	6.8	3.9	0.29
Feb. 1	7 55.6	4 45 34.96	25 13 7.8	10.2	5.8	0.42	18	6 6.8	5 53 49.90	25 42 44.7	6.8	3.9	0.29
2	7 52.5	4 46 25.75	25 13 52.1	10.1	5.7	0.42	19	6 4.8	5 55 50.38	25 42 15.0	6.7	3.9	0.29
3	7 49.5	4 47 19.01	25 14 39.1	10.0	5.7	0.41	20	6 2.9	5 57 51.67	25 41 39.8	6.7	3.8	0.28
4	7 46.5	4 48 14.70	+25 15 28.6	9.9	5.6	0.41	21	6 1.0	5 59 53.75	+25 40 59.0	6.6	3.8	0.28
5	7 43.5	4 49 12.78	25 16 20.3	9.8	5.6	0.41	22	5 59.1	6 1 56.62	25 40 12.5	6.6	3.8	0.28
6	7 40.6	4 50 13.19	25 17 14.1	9.7	5.5	0.40	23	5 57.2	6 4 0.24	25 39 20.3	6.5	3.8	0.28
7	7 37.7	4 51 15.88	25 18 9.8	9.6	5.4	0.40	24	5 55.4	6 6 4.59	25 38 22.2	6.5	3.7	0.28
8	7 34.8	4 52 20.78	25 19 7.2	9.5	5.4	0.40	25	5 53.5	6 8 9.68	25 37 18.1	6.4	3.7	0.27
9	7 32.0	4 53 27.85	+25 20 6.0	9.4	5.3	0.39	26	5 51.7	6 10 15.48	+25 36 7.8	6.4	3.7	0.27
10	7 29.2	4 54 37.04	25 21 6.1	9.3	5.3	0.39	27	5 49.9	6 12 21.97	25 34 51.2	6.3	3.6	0.27
11	7 26.5	4 55 48.30	25 22 7.2	9.2	5.2	0.39	28	5 48.1	6 14 29.14	25 33 28.3	6.3	3.6	0.27
12	7 23.8	4 57 1.57	25 23 9.1	9.1	5.2	0.38	29	5 46.2	6 16 36.97	25 31 59.0	6.2	3.6	0.27
13	7 21.1	4 58 16.79	25 24 11.5	9.0	5.1	0.38	30	5 44.4	6 18 45.43	25 30 23.2	6.2	3.5	0.26
14	7 18.5	4 59 33.92	+25 25 14.3	8.9	5.1	0.38	31	5 42.7	6 20 54.50	+25 28 40.8	6.1	3.5	0.26
15	7 15.8	5 0 52.91	+25 26 17.4	8.8	5.0	0.37	32	5 40.8	6 23 4.18	+25 26 51.5	6.1	3.5	0.26

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
Jan. 0	16 3.3	10 48 25.94	+ 8 50 11.7	1.8	19.5	1.40	Feb. 15	12 48.0	10 33 56.67	+10 27 24.4	2.0	21.3	1.54
1	15 59.3	10 48 20.95	8 50 59.6	1.9	19.6	1.40	16	12 43.6	10 33 27.68	10 30 22.2	2.0	21.3	1.54
2	15 55.3	10 48 15.25	8 51 51.7	1.9	19.6	1.41	17	12 39.2	10 32 58.54	10 33 20.5	2.0	21.3	1.54
3	15 51.2	10 48 8.82	8 52 48.1	1.9	19.7	1.41	18	12 34.7	10 32 29.26	10 36 18.9	2.0	21.3	1.54
4	15 47.2	10 48 1.67	8 53 48.9	1.9	19.7	1.42	19	12 30.3	10 31 59.87	10 39 17.4	2.0	21.3	1.54
5	15 43.1	10 47 53.79	+ 8 54 54.0	1.9	19.8	1.42	20	12 25.9	10 31 30.38	+10 42 15.8	2.0	21.3	1.54
6	15 39.0	10 47 45.21	8 56 3.2	1.9	19.8	1.42	21	12 21.5	10 31 0.83	10 45 14.2	2.0	21.3	1.54
7	15 34.9	10 47 35.92	8 57 16.6	1.9	19.9	1.43	22	12 17.1	10 30 31.21	10 48 12.3	2.0	21.3	1.54
8	15 30.8	10 47 25.93	8 58 34.1	1.9	19.9	1.43	23	12 12.6	10 30 1.56	10 51 9.9	2.0	21.3	1.54
9	15 26.7	10 47 15.24	8 59 55.8	1.9	20.0	1.44	24	12 8.2	10 29 31.91	10 54 7.0	2.0	21.3	1.54
10	15 22.6	10 47 3.87	+ 9 1 21.5	1.9	20.0	1.44	25	12 3.8	10 29 2.28	+10 57 3.7	2.0	21.3	1.54
11	15 18.5	10 46 51.82	9 2 51.1	1.9	20.1	1.45	26	11 59.4	10 28 32.69	10 59 59.5	2.0	21.3	1.54
12	15 14.3	10 46 39.08	9 4 24.7	1.9	20.1	1.45	27	11 54.9	10 28 3.14	11 2 54.2	2.0	21.3	1.54
13	15 10.2	10 46 25.67	9 6 2.1	1.9	20.2	1.45	28	11 50.5	10 27 33.67	11 5 47.9	2.0	21.3	1.54
14	15 6.0	10 46 11.60	9 7 43.3	1.9	20.2	1.46	Mar. 1	11 46.1	10 27 4.30	11 8 40.6	2.0	21.3	1.54
15	15 1.8	10 45 56.88	+ 9 9 28.3	1.9	20.3	1.46	2	11 41.7	10 26 35.05	+11 11 32.0	2.0	21.3	1.54
16	14 57.7	10 45 41.51	9 11 17.1	1.9	20.3	1.47	3	11 37.3	10 26 5.95	11 14 21.9	2.0	21.3	1.54
17	14 53.5	10 45 25.49	9 13 9.5	1.9	20.4	1.47	4	11 32.9	10 25 37.01	11 17 10.3	2.0	21.3	1.54
18	14 49.2	10 45 8.84	9 15 5.4	1.9	20.4	1.47	5	11 28.5	10 25 8.26	11 19 57.1	2.0	21.3	1.54
19	14 45.0	10 44 51.57	9 17 4.7	1.9	20.5	1.47	6	11 24.1	10 24 39.73	11 22 42.0	2.0	21.3	1.54
20	14 40.8	10 44 33.70	+ 9 19 7.6	1.9	20.5	1.48	7	11 19.7	10 24 11.43	+11 25 25.0	2.0	21.3	1.54
21	14 36.6	10 44 15.21	9 21 13.9	1.9	20.5	1.48	8	11 15.3	10 23 43.37	11 28 5.9	2.0	21.2	1.54
22	14 32.3	10 43 56.13	9 23 23.5	2.0	20.6	1.48	9	11 10.9	10 23 15.59	11 30 44.9	2.0	21.2	1.54
23	14 28.1	10 43 36.48	9 25 36.2	2.0	20.6	1.48	10	11 6.5	10 22 48.12	11 33 21.6	2.0	21.2	1.53
24	14 23.8	10 43 16.24	9 27 52.0	2.0	20.6	1.49	11	11 2.1	10 22 20.95	11 35 55.9	2.0	21.2	1.53
25	14 19.5	10 42 55.44	+ 9 30 11.1	2.0	20.7	1.49	12	10 57.7	10 21 54.09	+11 38 27.8	2.0	21.1	1.53
26	14 15.2	10 42 34.10	9 32 33.0	2.0	20.7	1.49	13	10 53.3	10 21 27.56	11 40 57.4	2.0	21.1	1.53
27	14 10.9	10 42 12.23	9 34 57.8	2.0	20.8	1.49	14	10 49.0	10 21 1.42	11 43 24.4	2.0	21.1	1.53
28	14 6.7	10 41 49.84	9 37 25.4	2.0	20.8	1.50	15	10 44.6	10 20 35.66	11 45 48.6	2.0	21.1	1.53
29	14 2.3	10 41 26.93	9 39 55.7	2.0	20.9	1.50	16	10 40.3	10 20 10.29	11 48 10.0	2.0	21.0	1.53
30	13 58.0	10 41 3.53	+ 9 42 28.4	2.0	20.9	1.50	17	10 35.9	10 19 45.34	+11 50 28.8	2.0	21.0	1.52
31	13 53.7	10 40 39.66	9 45 3.7	2.0	20.9	1.50	18	10 31.6	10 19 20.82	11 52 44.6	2.0	21.0	1.52
Feb. 1	13 49.4	10 40 15.33	9 47 41.4	2.0	21.0	1.51	19	10 27.2	10 18 56.73	11 54 57.4	2.0	20.9	1.52
2	13 45.0	10 39 50.55	9 50 21.4	2.0	21.0	1.51	20	10 22.9	10 18 33.10	11 57 7.2	2.0	20.9	1.52
3	13 40.7	10 39 25.34	9 53 3.3	2.0	21.0	1.51	21	10 18.6	10 18 9.94	11 59 13.9	2.0	20.9	1.51
4	13 36.3	10 38 59.73	+ 9 55 47.1	2.0	21.0	1.51	22	10 14.3	10 17 47.27	+12 1 17.5	2.0	20.8	1.51
5	13 32.0	10 38 33.74	9 58 32.9	2.0	21.0	1.52	23	10 10.0	10 17 25.10	12 3 17.8	2.0	20.8	1.51
6	13 27.6	10 38 7.37	10 1 20.3	2.0	21.1	1.52	24	10 5.7	10 17 3.45	12 5 14.9	2.0	20.7	1.50
7	13 23.2	10 37 40.66	10 4 9.3	2.0	21.1	1.52	25	10 1.4	10 16 42.31	12 7 8.6	2.0	20.7	1.50
8	13 18.8	10 37 13.62	10 6 59.8	2.0	21.1	1.52	26	9 57.1	10 16 21.70	12 8 59.0	2.0	20.7	1.50
9	13 14.4	10 36 46.26	+10 9 51.8	2.0	21.2	1.53	27	9 52.9	10 16 1.66	+12 10 45.8	1.9	20.6	1.50
10	13 10.0	10 36 18.61	10 12 45.0	2.0	21.2	1.53	28	9 48.6	10 15 42.19	12 12 29.1	1.9	20.6	1.49
11	13 5.6	10 35 50.69	10 15 39.2	2.0	21.2	1.53	29	9 44.4	10 15 23.29	12 14 8.8	1.9	20.5	1.49
12	13 1.2	10 35 22.52	10 18 34.3	2.0	21.2	1.53	30	9 40.1	10 15 4.99	12 15 44.9	1.9	20.5	1.49
13	12 56.8	10 34 54.11	10 21 30.4	2.0	21.2	1.54	31	9 35.9	10 14 47.29	12 17 17.3	1.9	20.5	1.49
14	12 52.4	10 34 25.49	+10 24 27.2	2.0	21.3	1.54	Apr. 1	9 31.7	10 14 30.19	+12 18 45.9	1.9	20.4	1.48
15	12 48.0	10 33 56.67	+10 27 24.4	2.0	21.3	1.54	2	9 27.5	10 14 13.71	+12 20 10.7	1.9	20.4	1.48

FOR TRANSIT AT WASHINGTON.

Data.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.	Data.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
Apr. 1	9 31.7	10 14 30.19	+12 18 45.9	1.9	20.4	1.48	May 17	6 29.9	10 13 37.16	+12 16 11.7	1.7	17.9	1.30
2	9 27.5	10 14 13.71	12 20 10.7	1.9	20.4	1.48	18	6 26.3	10 13 51.85	12 14 39.3	1.7	17.9	1.29
3	9 23.3	10 13 57.87	12 21 31.7	1.9	20.3	1.47	19	6 22.6	10 14 7.14	12 13 3.4	1.7	17.8	1.29
4	9 19.1	10 13 42.69	12 22 48.9	1.9	20.3	1.47	20	6 18.9	10 14 23.05	12 11 24.2	1.7	17.8	1.29
5	9 14.9	10 13 28.15	12 24 2.2	1.9	20.2	1.47	21	6 15.2	10 14 39.58	12 9 41.5	1.7	17.7	1.28
6	9 10.8	10 13 14.26	+12 25 11.7	1.9	20.2	1.46	22	6 11.6	10 14 56.69	+12 7 55.5	1.7	17.7	1.28
7	9 6.6	10 13 1.02	12 26 17.2	1.9	20.1	1.46	23	6 8.0	10 15 14.39	12 6 6.1	1.6	17.6	1.28
8	9 2.5	10 12 48.44	12 27 18.8	1.9	20.1	1.46	24	6 4.3	10 15 32.68	12 4 13.3	1.6	17.6	1.27
9	8 58.4	10 12 36.54	12 28 16.3	1.9	20.0	1.45	25	6 0.7	10 15 51.56	12 2 17.3	1.6	17.5	1.27
10	8 54.2	10 12 25.31	12 29 10.0	1.9	20.0	1.45	26	5 57.1	10 16 11.02	12 0 18.0	1.6	17.5	1.27
11	8 50.1	10 12 14.77	+12 29 59.6	1.9	19.9	1.44	27	5 53.5	10 16 31.05	+11 58 15.3	1.6	17.4	1.27
12	8 46.0	10 12 4.92	12 30 45.2	1.9	19.9	1.44	28	5 49.9	10 16 51.65	11 56 9.4	1.6	17.4	1.26
13	8 42.0	10 11 55.75	12 31 26.9	1.9	19.8	1.44	29	5 46.3	10 17 12.81	11 54 0.3	1.6	17.3	1.26
14	8 37.9	10 11 47.27	12 32 4.7	1.9	19.8	1.43	30	5 42.8	10 17 34.52	11 51 48.1	1.6	17.3	1.26
15	8 33.8	10 11 39.48	12 32 38.4	1.9	19.7	1.43	31	5 39.2	10 17 56.79	+11 49 32.7	1.6	17.2	1.25
16	8 29.8	10 11 32.39	+12 33 8.2	1.9	19.7	1.43	Dec. 1	19 38.1	12 24 37.45	- 1 21 25.8	1.5	16.2	1.16
17	8 25.7	10 11 26.01	12 33 34.1	1.9	19.6	1.42	2	19 34.7	12 25 9.04	- 1 24 36.5	1.5	16.3	1.16
18	8 21.7	10 11 20.32	12 33 56.0	1.9	19.6	1.42	3	19 31.3	12 25 40.20	- 1 27 44.3	1.5	16.3	1.16
19	8 17.7	10 11 15.33	12 34 13.8	1.8	19.5	1.41	4	19 27.9	12 26 10.91	- 1 30 49.0	1.5	16.3	1.16
20	8 13.7	10 11 11.04	12 34 27.6	1.8	19.4	1.41	5	19 24.5	12 26 41.17	- 1 33 50.6	1.5	16.4	1.16
21	8 9.7	10 11 7.45	+12 34 37.5	1.8	19.4	1.41	6	19 21.0	12 27 10.98	- 1 36 49.2	1.5	16.4	1.17
22	8 5.7	10 11 4.56	12 34 43.5	1.8	19.3	1.40	7	19 17.6	12 27 40.33	- 1 39 44.6	1.6	16.4	1.17
23	8 1.7	10 11 2.37	12 34 45.5	1.8	19.2	1.40	8	19 14.1	12 28 9.20	- 1 42 36.7	1.6	16.5	1.17
24	7 57.8	10 11 0.88	12 34 43.5	1.8	19.2	1.40	9	19 10.7	12 28 37.59	- 1 45 25.6	1.6	16.5	1.17
25	7 53.8	10 11 0.10	12 34 37.5	1.8	19.1	1.39	10	19 7.2	12 29 5.52	- 1 48 11.3	1.6	16.6	1.18
26	7 49.9	10 11 0.03	+12 34 27.7	1.8	19.1	1.39	11	19 3.7	12 29 32.96	- 1 50 53.6	1.6	16.6	1.18
27	7 46.0	10 11 0.65	12 34 13.8	1.8	19.0	1.38	12	19 0.2	12 29 59.90	- 1 53 32.5	1.6	16.6	1.18
28	7 42.1	10 11 1.98	12 33 56.0	1.8	19.0	1.38	13	18 56.7	12 30 26.34	- 1 56 8.0	1.6	16.7	1.18
29	7 38.2	10 11 4.01	12 33 34.3	1.8	18.9	1.38	14	18 53.3	12 30 52.28	- 1 58 40.0	1.6	16.7	1.19
30	7 34.3	10 11 6.74	12 33 8.6	1.8	18.9	1.37	15	18 49.7	12 31 17.71	- 2 1 8.6	1.6	16.8	1.19
May 1	7 30.4	10 11 10.18	+12 32 38.9	1.8	18.8	1.37	16	18 46.2	12 31 42.61	- 2 3 33.6	1.6	16.8	1.19
2	7 26.5	10 11 14.31	12 32 5.3	1.8	18.8	1.36	17	18 42.7	12 32 6.97	- 2 5 55.1	1.6	16.9	1.20
3	7 22.7	10 11 19.13	12 31 27.9	1.8	18.7	1.36	18	18 39.2	12 32 30.80	- 2 8 12.9	1.6	16.9	1.20
4	7 18.9	10 11 24.65	12 30 46.7	1.8	18.7	1.35	19	18 35.6	12 32 54.09	- 2 10 27.0	1.6	17.0	1.21
5	7 15.0	10 11 30.85	12 30 1.7	1.8	18.6	1.35	20	18 32.1	12 33 16.82	- 2 12 37.3	1.6	17.0	1.21
6	7 11.2	10 11 37.73	+12 29 12.9	1.7	18.6	1.35	21	18 28.5	12 33 38.99	- 2 14 43.9	1.6	17.1	1.21
7	7 7.4	10 11 45.29	12 28 20.3	1.7	18.5	1.34	22	18 24.9	12 34 0.63	- 2 16 46.7	1.6	17.1	1.22
8	7 3.6	10 11 53.53	12 27 23.8	1.7	18.5	1.34	23	18 21.3	12 34 21.68	- 2 18 45.7	1.6	17.2	1.22
9	6 59.8	10 12 2.44	12 26 23.6	1.7	18.4	1.34	24	18 17.7	12 34 42.15	- 2 20 40.8	1.6	17.2	1.22
10	6 56.1	10 12 12.01	12 25 19.8	1.7	18.4	1.33	25	18 14.1	12 35 2.03	- 2 22 32.0	1.6	17.3	1.23
11	6 52.3	10 12 22.23	+12 24 12.3	1.7	18.3	1.33	26	18 10.5	12 35 21.32	- 2 24 19.4	1.6	17.3	1.23
12	6 48.5	10 12 33.13	12 23 1.1	1.7	18.3	1.32	27	18 6.9	12 35 40.02	- 2 26 2.8	1.6	17.4	1.24
13	6 44.8	10 12 44.66	12 21 46.3	1.7	18.2	1.32	28	18 3.3	12 35 58.11	- 2 27 42.2	1.6	17.4	1.24
14	6 41.1	10 12 56.83	12 20 27.9	1.7	18.1	1.31	29	17 59.7	12 36 15.59	- 2 29 17.6	1.6	17.5	1.24
15	6 37.4	10 13 9.64	12 19 6.0	1.7	18.1	1.31	30	17 56.0	12 36 32.47	- 2 30 49.0	1.6	17.5	1.25
16	6 33.6	10 13 23.09	+12 17 40.6	1.7	18.0	1.30	31	17 52.3	12 36 48.73	- 2 32 16.3	1.7	17.6	1.25
17	6 29.9	10 13 37.16	+12 16 11.7	1.7	17.9	1.30	32	17 48.6	12 37 4.36	- 2 33 39.5	1.7	17.6	1.26

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
Feb. 14	18 11.7	15 54 33.89	18 10 6.2	0.9	7.9	0.59	Apr. 1	15 10.8	15 54 32.47	18 2 14.9	1.0	8.4	0.63
15	18 7.9	15 54 43.08	18 10 23.4	0.9	7.9	0.59	2	15 6.7	15 54 23.11	18 1 38.5	1.0	8.4	0.63
16	18 4.1	15 54 51.87	18 10 39.3	0.9	7.9	0.59	3	15 2.6	15 54 13.39	18 1 1.0	1.0	8.4	0.63
17	18 0.3	15 55 0.26	18 10 53.9	0.9	7.9	0.59	4	14 58.5	15 54 3.33	18 0 22.7	1.0	8.5	0.63
18	17 56.5	15 55 8.25	18 11 7.3	0.9	7.9	0.59	5	14 54.4	15 53 52.93	17 59 43.6	1.0	8.5	0.64
19	17 52.7	15 55 15.84	18 11 19.5	0.9	7.9	0.59	6	14 50.3	15 53 42.19	17 59 3.6	1.0	8.5	0.64
20	17 48.9	15 55 23.02	18 11 30.3	0.9	7.9	0.59	7	14 46.2	15 53 31.12	17 58 22.6	1.0	8.5	0.64
21	17 45.1	15 55 29.79	18 11 39.9	0.9	7.9	0.59	8	14 42.1	15 53 19.72	17 57 40.7	1.0	8.5	0.64
22	17 41.2	15 55 36.15	18 11 48.3	0.9	7.9	0.59	9	14 37.9	15 53 8.00	17 56 58.1	1.0	8.5	0.64
23	17 37.4	15 55 42.11	18 11 55.3	0.9	8.0	0.60	10	14 33.8	15 52 55.97	17 56 14.7	1.0	8.5	0.64
24	17 33.6	15 55 47.65	18 12 1.1	0.9	8.0	0.60	11	14 29.7	15 52 43.64	17 55 30.5	1.0	8.5	0.64
25	17 29.7	15 55 52.78	18 12 5.6	0.9	8.0	0.60	12	14 25.5	15 52 31.01	17 54 45.5	1.0	8.5	0.64
26	17 25.9	15 55 57.49	18 12 8.8	0.9	8.0	0.60	13	14 21.4	15 52 18.09	17 53 59.7	1.0	8.6	0.64
27	17 22.0	15 56 1.79	18 12 10.8	0.9	8.0	0.60	14	14 17.2	15 52 4.87	17 53 13.1	1.0	8.6	0.64
28	17 18.2	15 56 5.67	18 12 11.5	0.9	8.0	0.60	15	14 13.1	15 51 51.37	17 52 25.9	1.0	8.6	0.64
Mar. 1	17 14.3	15 56 9.14	18 12 11.1	0.9	8.0	0.60	16	14 8.9	15 51 37.61	17 51 38.0	1.0	8.6	0.64
2	17 10.4	15 56 12.18	18 12 9.4	0.9	8.0	0.60	17	14 4.7	15 51 23.59	17 50 49.4	1.0	8.6	0.64
3	17 6.5	15 56 14.80	18 12 6.4	0.9	8.1	0.61	18	14 0.6	15 51 9.29	17 50 0.0	1.0	8.6	0.64
4	17 2.6	15 56 17.00	18 12 2.2	0.9	8.1	0.61	19	13 56.4	15 50 54.74	17 49 10.1	1.0	8.6	0.65
5	16 58.7	15 56 18.78	18 11 56.9	0.9	8.1	0.61	20	13 52.2	15 50 39.94	17 48 19.6	1.0	8.6	0.65
6	16 54.8	15 56 20.14	18 11 50.2	0.9	8.1	0.61	21	13 48.0	15 50 24.91	17 47 28.5	1.0	8.6	0.65
7	16 50.9	15 56 21.08	18 11 42.3	0.9	8.1	0.61	22	13 43.9	15 50 9.65	17 46 36.8	1.0	8.6	0.65
8	16 47.0	15 56 21.60	18 11 33.2	0.9	8.1	0.61	23	13 39.7	15 49 54.16	17 45 44.5	1.0	8.6	0.65
9	16 43.0	15 56 21.70	18 11 23.0	0.9	8.1	0.61	24	13 35.5	15 49 38.45	17 44 51.6	1.0	8.7	0.65
10	16 39.1	15 56 21.39	18 11 11.6	0.9	8.1	0.61	25	13 31.3	15 49 22.53	17 43 58.3	1.0	8.7	0.65
11	16 35.2	15 56 20.66	18 10 59.0	0.9	8.2	0.62	26	13 27.1	15 49 6.41	17 43 4.6	1.0	8.7	0.65
12	16 31.2	15 56 19.51	18 10 45.2	0.9	8.2	0.62	27	13 22.9	15 48 50.10	17 42 10.4	1.0	8.7	0.65
13	16 27.3	15 56 17.94	18 10 30.3	0.9	8.2	0.62	28	13 18.7	15 48 33.60	17 41 15.8	1.0	8.7	0.65
14	16 23.3	15 56 15.97	18 10 14.1	0.9	8.2	0.62	29	13 14.5	15 48 16.93	17 40 20.8	1.0	8.7	0.65
15	16 19.3	15 56 13.59	18 9 56.8	0.9	8.2	0.62	30	13 10.3	15 48 0.08	17 39 25.4	1.0	8.7	0.65
16	16 15.3	15 56 10.80	18 9 38.3	0.9	8.2	0.62	May 1	13 6.1	15 47 43.08	17 38 29.6	1.0	8.7	0.65
17	16 11.4	15 56 7.61	18 9 18.8	0.9	8.2	0.62	2	13 1.8	15 47 25.93	17 37 33.5	1.0	8.7	0.65
18	16 7.4	15 56 4.01	18 8 58.1	0.9	8.2	0.62	3	12 57.6	15 47 8.64	17 36 37.1	1.0	8.7	0.65
19	16 3.4	15 56 0.02	18 8 36.3	0.9	8.3	0.62	4	12 53.4	15 46 51.21	17 35 40.4	1.0	8.7	0.65
20	15 59.4	15 55 55.62	18 8 13.4	0.9	8.3	0.62	5	12 49.2	15 46 33.66	17 34 43.5	1.0	8.7	0.65
21	15 55.4	15 55 50.82	18 7 49.4	0.9	8.3	0.62	6	12 44.9	15 46 16.01	17 33 46.4	1.0	8.7	0.65
22	15 51.3	15 55 45.62	18 7 24.2	0.9	8.3	0.62	7	12 40.7	15 45 58.26	17 32 49.2	1.0	8.7	0.65
23	15 47.3	15 55 40.04	18 6 58.0	0.9	8.3	0.62	8	12 36.5	15 45 40.41	17 31 51.9	1.0	8.7	0.65
24	15 43.3	15 55 34.06	18 6 30.7	0.9	8.3	0.62	9	12 32.2	15 45 22.48	17 30 54.4	1.0	8.7	0.65
25	15 39.2	15 55 27.69	18 6 2.3	0.9	8.3	0.63	10	12 28.0	15 45 4.48	17 29 56.9	1.0	8.7	0.65
26	15 35.2	15 55 20.93	18 5 32.8	1.0	8.3	0.63	11	12 23.8	15 44 46.42	17 28 59.3	1.0	8.7	0.65
27	15 31.1	15 55 13.79	18 5 2.3	1.0	8.4	0.63	12	12 19.6	15 44 28.31	17 28 1.7	1.0	8.7	0.65
28	15 27.1	15 55 6.27	18 4 30.8	1.0	8.4	0.63	13	12 15.3	15 44 10.15	17 27 4.1	1.0	8.7	0.65
29	15 23.0	15 54 58.37	18 3 58.2	1.0	8.4	0.63	14	12 11.1	15 43 51.95	17 26 6.5	1.0	8.7	0.65
30	15 18.9	15 54 50.10	18 3 24.7	1.0	8.4	0.63	15	12 6.9	15 43 33.72	17 25 9.0	1.0	8.7	0.65
31	15 14.9	15 54 41.47	18 2 50.3	1.0	8.4	0.63	16	12 2.6	15 43 15.46	17 24 11.5	1.0	8.7	0.65
Apr. 1	15 10.8	15 54 32.47	18 2 14.9	1.0	8.4	0.63	17	11 58.4	15 42 57.20	17 23 14.1	1.0	8.7	0.65

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
May 16	12 2.6	15 43 15.46	-17 24 11.5	1.0	8.7	0.65	July 1	8 49.9	15 31 24.57	-16 50 10.7	1.0	8.4	0.63
17	11 58.4	15 42 57.20	17 23 14.1	1.0	8.7	0.65	2	8 45.8	15 31 14.75	16 49 49.2	1.0	8.4	0.63
18	11 54.1	15 42 38.94	17 22 16.9	1.0	8.7	0.65	3	8 41.7	15 31 5.27	16 49 29.0	1.0	8.4	0.63
19	11 49.9	15 42 20.69	17 21 19.9	1.0	8.7	0.65	4	8 37.6	15 30 56.13	16 49 10.1	1.0	8.4	0.63
20	11 45.7	15 42 2.44	17 20 23.1	1.0	8.7	0.65	5	8 33.6	15 30 47.33	16 48 52.6	1.0	8.4	0.63
21	11 41.4	15 41 44.21	-17 19 26.5	1.0	8.7	0.65	6	8 29.5	15 30 38.88	-16 48 36.4	1.0	8.4	0.63
22	11 37.2	15 41 26.03	17 18 30.2	1.0	8.7	0.65	7	8 25.4	15 30 30.78	16 48 21.5	1.0	8.4	0.62
23	11 33.0	15 41 7.89	17 17 34.2	1.0	8.7	0.65	8	8 21.4	15 30 23.04	16 48 8.0	1.0	8.4	0.62
24	11 28.7	15 40 49.80	17 16 38.5	1.0	8.7	0.65	9	8 17.3	15 30 15.66	16 47 55.8	0.9	8.3	0.62
25	11 24.5	15 40 31.77	17 15 43.2	1.0	8.7	0.65	10	8 13.3	15 30 8.64	16 47 45.0	0.9	8.3	0.62
26	11 20.3	15 40 13.82	-17 14 48.4	1.0	8.7	0.65	11	8 9.2	15 30 1.98	-16 47 35.6	0.9	8.3	0.62
27	11 16.0	15 39 55.95	17 13 53.9	1.0	8.7	0.65	12	8 5.2	15 29 55.68	16 47 27.6	0.9	8.3	0.62
28	11 11.8	15 39 38.15	17 12 59.8	1.0	8.7	0.65	13	8 1.2	15 29 49.75	16 47 21.0	0.9	8.3	0.62
29	11 7.6	15 39 20.46	17 12 6.3	1.0	8.7	0.65	14	7 57.2	15 29 44.19	16 47 15.8	0.9	8.3	0.62
30	11 3.4	15 39 2.88	17 11 13.3	1.0	8.7	0.65	15	7 53.1	15 29 39.00	16 47 11.9	0.9	8.2	0.62
31	10 59.1	15 38 45.42	-17 10 20.7	1.0	8.7	0.65	16	7 49.1	15 29 34.18	-16 47 9.5	0.9	8.2	0.62
June 1	10 54.9	15 38 28.08	17 9 28.8	1.0	8.7	0.65	17	7 45.1	15 29 29.74	16 47 8.5	0.9	8.2	0.62
2	10 50.7	15 38 10.87	17 8 37.5	1.0	8.7	0.65	18	7 41.1	15 29 25.67	16 47 8.9	0.9	8.2	0.62
3	10 46.5	15 37 53.81	17 7 46.8	1.0	8.7	0.64	19	7 37.1	15 29 21.99	16 47 10.6	0.9	8.2	0.62
4	10 42.3	15 37 36.90	17 6 56.8	1.0	8.7	0.64	20	7 33.1	15 29 18.69	16 47 13.9	0.9	8.2	0.61
5	10 38.1	15 37 20.16	-17 6 7.5	1.0	8.7	0.64	21	7 29.2	15 29 15.78	-16 47 18.6	0.9	8.2	0.61
6	10 33.8	15 37 3.58	17 5 18.9	1.0	8.7	0.64	22	7 25.2	15 29 13.24	16 47 24.7	0.9	8.2	0.61
7	10 29.6	15 36 47.18	17 4 31.1	1.0	8.7	0.64	23	7 21.2	15 29 11.09	16 47 32.3	0.9	8.1	0.61
8	10 25.4	15 36 30.97	17 3 44.1	1.0	8.7	0.64	24	7 17.2	15 29 9.33	16 47 41.4	0.9	8.1	0.61
9	10 21.2	15 36 14.95	17 2 57.9	1.0	8.7	0.64	25	7 13.3	15 29 7.97	16 47 51.9	0.9	8.1	0.61
10	10 17.0	15 35 59.14	-17 2 12.5	1.0	8.6	0.64	26	7 9.3	15 29 6.99	-16 48 3.8	0.9	8.1	0.61
11	10 12.9	15 35 43.53	17 1 27.9	1.0	8.6	0.64	27	7 5.4	15 29 6.40	16 48 17.2	0.9	8.1	0.61
12	10 8.7	15 35 28.13	17 0 44.2	1.0	8.6	0.64	28	7 1.5	15 29 6.20	16 48 32.1	0.9	8.1	0.61
13	10 4.5	15 35 12.95	17 0 1.4	1.0	8.6	0.64	29	6 57.5	15 29 6.39	16 48 48.3	0.9	8.1	0.61
14	10 0.3	15 34 57.99	16 59 19.5	1.0	8.6	0.64	30	6 53.6	15 29 6.98	16 49 6.0	0.9	8.1	0.61
15	9 56.1	15 34 43.27	-16 58 38.6	1.0	8.6	0.64	31	6 49.7	15 29 7.96	-16 49 25.1	0.9	8.1	0.60
16	9 52.0	15 34 28.78	16 57 58.7	1.0	8.6	0.64	Aug. 1	6 45.8	15 29 9.35	16 49 45.8	0.9	8.0	0.60
17	9 47.8	15 34 14.54	16 57 19.8	1.0	8.6	0.64	2	6 41.9	15 29 11.13	16 50 7.9	0.9	8.0	0.60
18	9 43.6	15 34 0.55	16 56 41.8	1.0	8.6	0.64	3	6 38.0	15 29 13.30	16 50 31.3	0.9	8.0	0.60
19	9 39.5	15 33 46.83	16 56 4.9	1.0	8.6	0.64	4	6 34.1	15 29 15.86	16 50 56.0	0.9	8.0	0.60
20	9 35.3	15 33 33.38	-16 55 29.1	1.0	8.5	0.64	5	6 30.2	15 29 18.82	-16 51 22.2	0.9	8.0	0.60
21	9 31.1	15 33 20.19	16 54 54.3	1.0	8.5	0.63	6	6 26.3	15 29 22.17	16 51 49.8	0.9	8.0	0.60
22	9 27.0	15 33 7.27	16 54 20.5	1.0	8.5	0.63	7	6 22.5	15 29 25.91	16 52 18.8	0.9	8.0	0.60
23	9 22.9	15 32 54.64	16 53 47.9	1.0	8.5	0.63	8	6 18.6	15 29 30.04	16 52 49.1	0.9	8.0	0.60
24	9 18.7	15 32 42.31	16 53 16.5	1.0	8.5	0.63	9	6 14.7	15 29 34.55	16 53 20.8	0.9	8.0	0.59
25	9 14.6	15 32 30.27	-16 52 46.3	1.0	8.5	0.63	10	6 10.9	15 29 39.45	-16 53 53.8	0.9	7.9	0.59
26	9 10.5	15 32 18.53	16 52 17.2	1.0	8.5	0.63	11	6 7.1	15 29 44.73	16 54 28.2	0.9	7.9	0.59
27	9 6.4	15 32 7.11	16 51 49.4	1.0	8.5	0.63	12	6 3.2	15 29 50.40	16 55 4.0	0.9	7.9	0.59
28	9 2.2	15 31 55.99	16 51 22.8	1.0	8.5	0.63	13	5 59.4	15 29 56.46	16 55 41.1	0.9	7.9	0.59
29	8 58.1	15 31 45.18	16 50 57.5	1.0	8.5	0.63	14	5 55.6	15 30 2.90	16 56 19.5	0.9	7.9	0.59
30	8 54.0	15 31 34.71	-16 50 33.5	1.0	8.4	0.63	15	5 51.7	15 30 9.71	-16 56 59.2	0.9	7.9	0.59
July 1	8 49.9	15 31 24.57	-16 50 10.7	1.0	8.4	0.63	16	5 47.9	15 30 16.89	-16 57 40.2	0.9	7.9	0.59

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.
Feb. 15	h m	h m s	° ' "	"	"	"	Apr. 1	h m	h m s	° ' "	"	"	"
16	18 0.3	15 47 3.70	19 42 21.5	0.5	1.8	0.13	2	15 2.2	15 45 55.53	19 38 38.9	0.5	1.8	0.13
17	17 56.4	15 47 7.01	19 42 31.7	0.5	1.8	0.13	3	14 58.1	15 45 49.34	19 38 19.3	0.5	1.9	0.13
18	17 52.5	15 47 10.10	19 42 41.2	0.5	1.8	0.13	4	14 54.1	15 45 42.99	19 37 59.2	0.5	1.9	0.13
19	17 48.6	15 47 12.96	19 42 50.0	0.5	1.8	0.13	5	14 50.1	15 45 36.48	19 37 38.5	0.5	1.9	0.13
20	17 44.7	15 47 15.59	19 42 58.1	0.5	1.8	0.13	6	14 46.0	15 45 29.80	19 37 17.2	0.5	1.9	0.13
21	17 40.8	15 47 18.00	19 43 5.6	0.5	1.8	0.13	7	14 42.0	15 45 22.95	19 36 55.3	0.5	1.9	0.13
22	17 36.9	15 47 20.18	19 43 12.3	0.5	1.8	0.13	8	14 37.9	15 45 15.95	19 36 32.9	0.5	1.9	0.13
23	17 33.0	15 47 22.13	19 43 18.3	0.5	1.8	0.13	9	14 33.9	15 45 8.80	19 36 10.1	0.5	1.9	0.13
24	17 29.1	15 47 23.87	19 43 23.6	0.5	1.8	0.13	10	14 29.8	15 45 1.49	19 35 46.8	0.5	1.9	0.13
25	17 25.2	15 47 25.38	19 43 28.2	0.5	1.8	0.13	11	14 25.7	15 44 54.03	19 35 22.9	0.5	1.9	0.13
26	17 21.3	15 47 26.67	19 43 32.0	0.5	1.8	0.13	12	14 21.7	15 44 46.43	19 34 58.6	0.5	1.9	0.13
27	17 17.4	15 47 27.73	19 43 35.2	0.5	1.8	0.13	13	14 17.6	15 44 38.68	19 34 33.8	0.5	1.9	0.13
28	17 13.5	15 47 28.56	19 43 37.7	0.5	1.8	0.13	14	14 13.6	15 44 30.80	19 34 8.6	0.5	1.9	0.13
Mar. 1	17 9.6	15 47 29.17	19 43 39.4	0.5	1.8	0.13	15	14 9.5	15 44 22.77	19 33 43.0	0.5	1.9	0.13
2	17 5.6	15 47 29.56	19 43 40.3	0.5	1.8	0.13	16	14 5.5	15 44 14.62	19 33 16.9	0.5	1.9	0.13
3	17 1.7	15 47 29.73	19 43 40.5	0.5	1.8	0.13	17	14 1.4	15 44 6.34	19 32 50.3	0.5	1.9	0.13
4	16 57.8	15 47 29.67	19 43 40.1	0.5	1.8	0.13	18	13 57.3	15 43 57.94	19 32 23.4	0.5	1.9	0.13
5	16 53.8	15 47 29.38	19 43 39.0	0.5	1.8	0.13	19	13 53.2	15 43 49.41	19 31 56.1	0.5	1.9	0.13
6	16 49.9	15 47 28.87	19 43 37.2	0.5	1.8	0.13	20	13 49.2	15 43 40.76	19 31 28.4	0.5	1.9	0.13
7	16 45.9	15 47 28.13	19 43 34.7	0.5	1.8	0.13	21	13 45.1	15 43 31.99	19 31 0.3	0.5	1.9	0.13
8	16 42.0	15 47 27.17	19 43 31.5	0.5	1.8	0.13	22	13 41.0	15 43 23.12	19 30 31.8	0.5	1.9	0.13
9	16 38.1	15 47 25.99	19 43 27.7	0.5	1.8	0.13	23	13 36.9	15 43 14.14	19 30 2.9	0.5	1.9	0.13
10	16 34.1	15 47 24.60	19 43 23.2	0.5	1.8	0.13	24	13 32.8	15 43 5.06	19 29 33.7	0.5	1.9	0.13
11	16 30.1	15 47 23.00	19 43 18.0	0.5	1.8	0.13	25	13 28.8	15 42 55.88	19 29 4.2	0.5	1.9	0.13
12	16 26.2	15 47 21.18	19 43 12.0	0.5	1.8	0.13	26	13 24.7	15 42 46.61	19 28 34.2	0.5	1.9	0.13
13	16 22.2	15 47 19.14	19 43 5.4	0.5	1.8	0.13	27	13 20.6	15 42 37.24	19 28 3.9	0.5	1.9	0.13
14	16 18.2	15 47 16.88	19 42 58.2	0.5	1.8	0.13	28	13 16.5	15 42 27.78	19 27 33.3	0.5	1.9	0.13
15	16 14.3	15 47 14.41	19 42 50.3	0.5	1.8	0.13	29	13 12.4	15 42 18.24	19 27 2.5	0.5	1.9	0.13
16	16 10.3	15 47 11.73	19 42 41.7	0.5	1.8	0.13	30	13 8.3	15 42 8.62	19 26 31.3	0.5	1.9	0.13
17	16 6.3	15 47 8.84	19 42 32.5	0.5	1.8	0.13	May 1	13 4.2	15 41 58.92	19 25 59.9	0.5	1.9	0.13
18	16 2.3	15 47 5.75	19 42 22.6	0.5	1.8	0.13	2	13 0.1	15 41 49.14	19 25 28.3	0.5	1.9	0.13
19	15 58.3	15 47 2.44	19 42 12.1	0.5	1.8	0.13	3	12 56.0	15 41 39.30	19 24 56.4	0.5	1.9	0.13
20	15 54.3	15 46 58.93	19 42 0.9	0.5	1.8	0.13	4	12 51.9	15 41 29.41	19 24 24.2	0.5	1.9	0.13
21	15 50.3	15 46 55.23	19 41 49.1	0.5	1.8	0.13	5	12 47.8	15 41 19.46	19 23 51.8	0.5	1.9	0.13
22	15 46.3	15 46 51.31	19 41 36.6	0.5	1.8	0.13	6	12 43.7	15 41 9.44	19 23 19.3	0.5	1.9	0.13
23	15 42.3	15 46 47.20	19 41 23.5	0.5	1.8	0.13	7	12 39.6	15 40 59.38	19 22 46.7	0.5	1.9	0.13
24	15 38.3	15 46 42.89	19 41 9.8	0.5	1.8	0.13	8	12 35.5	15 40 49.28	19 22 13.8	0.5	1.9	0.13
25	15 34.3	15 46 38.39	19 40 55.4	0.5	1.8	0.13	9	12 31.4	15 40 39.14	19 21 40.7	0.5	1.9	0.13
26	15 30.3	15 46 33.69	19 40 40.5	0.5	1.8	0.13	10	12 27.3	15 40 28.97	19 21 7.5	0.5	1.9	0.13
27	15 26.3	15 46 28.80	19 40 25.0	0.5	1.8	0.13	11	12 23.2	15 40 18.76	19 20 34.3	0.5	1.9	0.13
28	15 22.3	15 46 23.72	19 40 8.8	0.5	1.8	0.13	12	12 19.1	15 40 8.53	19 20 0.9	0.5	1.9	0.13
29	15 18.3	15 46 18.44	19 39 52.0	0.5	1.8	0.13	13	12 15.0	15 39 58.27	19 19 27.3	0.5	1.9	0.13
30	15 14.3	15 46 12.98	19 39 34.5	0.5	1.8	0.13	14	12 10.9	15 39 47.99	19 18 53.7	0.5	1.9	0.13
31	15 10.2	15 46 7.34	19 39 16.5	0.5	1.8	0.13	15	12 6.8	15 39 37.70	19 18 20.0	0.5	1.9	0.13
Apr. 1	15 6.2	15 46 1.52	19 38 58.0	0.5	1.8	0.13	16	12 2.7	15 39 27.40	19 17 46.2	0.5	1.9	0.13
2	15 2.2	15 45 55.53	19 38 38.9	0.5	1.8	0.13	17	11 58.6	15 39 17.09	19 17 12.4	0.5	1.9	0.13
3	14 58.1	15 45 49.34	19 38 19.3	0.5	1.9	0.13	18	11 54.5	15 39 6.78	19 16 38.6	0.5	1.9	0.13

FOR TRANSIT AT WASHINGTON.

Data.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.	Data.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
May 17	11 54.5	15 39 6.78	19 16 38.6	0.5	1.9	0.13	July 1	8 51.0	15 32 27.24	18 54 34.0	0.5	1.9	0.13
18	11 50.4	15 38 56.48	19 16 4.8	0.5	1.9	0.13	2	8 46.9	15 32 21.11	18 54 13.7	0.5	1.9	0.13
19	11 46.3	15 38 46.18	19 15 30.9	0.5	1.9	0.13	3	8 42.9	15 32 15.14	18 53 54.0	0.5	1.9	0.13
20	11 42.2	15 38 35.89	19 14 57.1	0.5	1.9	0.13	4	8 38.9	15 32 9.35	18 53 34.9	0.5	1.9	0.13
21	11 38.1	15 38 25.61	19 14 23.3	0.5	1.9	0.13	5	8 34.8	15 32 3.74	18 53 16.4	0.5	1.8	0.13
22	11 34.0	15 38 15.35	19 13 49.6	0.5	1.9	0.13	6	8 30.8	15 31 58.30	18 52 58.6	0.5	1.8	0.13
23	11 29.9	15 38 5.12	19 13 15.9	0.5	1.9	0.13	7	8 26.8	15 31 53.04	18 52 41.4	0.5	1.8	0.13
24	11 25.8	15 37 54.91	19 12 42.2	0.5	1.9	0.13	8	8 22.8	15 31 47.97	18 52 24.8	0.5	1.8	0.13
25	11 21.7	15 37 44.74	19 12 8.6	0.5	1.9	0.13	9	8 18.8	15 31 43.07	18 52 8.9	0.5	1.8	0.13
26	11 17.6	15 37 34.60	19 11 35.1	0.5	1.9	0.13	10	8 14.8	15 31 38.35	18 51 53.6	0.5	1.8	0.13
27	11 13.5	15 37 24.50	19 11 1.7	0.5	1.9	0.13	11	8 10.8	15 31 33.81	18 51 38.8	0.5	1.8	0.13
28	11 9.4	15 37 14.44	19 10 28.5	0.5	1.9	0.13	12	8 6.8	15 31 29.46	18 51 24.7	0.5	1.8	0.13
29	11 5.3	15 37 4.43	19 9 55.4	0.5	1.9	0.13	13	8 2.8	15 31 25.31	18 51 11.2	0.5	1.8	0.13
30	11 1.2	15 36 54.48	19 9 22.5	0.5	1.9	0.13	14	7 58.8	15 31 21.34	18 50 58.4	0.5	1.8	0.13
31	10 57.1	15 36 44.59	19 8 49.7	0.5	1.9	0.13	15	7 54.8	15 31 17.56	18 50 46.3	0.5	1.8	0.13
June 1	10 53.0	15 36 34.77	19 8 17.1	0.5	1.9	0.13	16	7 50.8	15 31 13.96	18 50 34.9	0.5	1.8	0.13
2	10 48.9	15 36 25.01	19 7 44.7	0.5	1.9	0.13	17	7 46.8	15 31 10.56	18 50 24.2	0.5	1.8	0.13
3	10 44.8	15 36 15.32	19 7 12.5	0.5	1.9	0.13	18	7 42.8	15 31 7.36	18 50 14.2	0.5	1.8	0.13
4	10 40.7	15 36 5.70	19 6 40.6	0.5	1.9	0.13	19	7 38.8	15 31 4.36	18 50 4.8	0.5	1.8	0.13
5	10 36.7	15 35 56.16	19 6 8.9	0.5	1.9	0.13	20	7 34.8	15 31 1.55	18 49 56.1	0.5	1.8	0.13
6	10 32.6	15 35 46.71	19 5 37.5	0.5	1.9	0.13	21	7 30.9	15 30 58.94	18 49 48.2	0.5	1.8	0.13
7	10 28.5	15 35 37.35	19 5 6.4	0.5	1.9	0.13	22	7 26.9	15 30 56.53	18 49 41.0	0.5	1.8	0.13
8	10 24.4	15 35 28.07	19 4 35.5	0.5	1.9	0.13	23	7 22.9	15 30 54.32	18 49 34.5	0.5	1.8	0.13
9	10 20.3	15 35 18.88	19 4 4.9	0.5	1.9	0.13	24	7 18.9	15 30 52.32	18 49 28.7	0.5	1.8	0.13
10	10 16.2	15 35 9.79	19 3 34.7	0.5	1.9	0.13	25	7 15.0	15 30 50.52	18 49 23.7	0.5	1.8	0.13
11	10 12.1	15 35 0.81	19 3 4.9	0.5	1.9	0.13	26	7 11.0	15 30 48.93	18 49 19.4	0.5	1.8	0.13
12	10 8.1	15 34 51.92	19 2 35.3	0.5	1.9	0.13	27	7 7.1	15 30 47.54	18 49 15.8	0.5	1.8	0.13
13	10 4.0	15 34 43.14	19 2 6.1	0.5	1.9	0.13	28	7 3.1	15 30 46.36	18 49 12.9	0.5	1.8	0.13
14	9 59.9	15 34 34.47	19 1 37.3	0.5	1.9	0.13	29	6 59.2	15 30 45.39	18 49 10.7	0.5	1.8	0.13
15	9 55.8	15 34 25.92	19 1 8.8	0.5	1.9	0.13	30	6 55.2	15 30 44.63	18 49 9.3	0.5	1.8	0.13
16	9 51.8	15 34 17.49	19 0 40.8	0.5	1.9	0.13	31	6 51.3	15 30 44.09	18 49 8.6	0.5	1.8	0.13
17	9 47.7	15 34 9.18	19 0 13.0	0.5	1.9	0.13	Aug. 1	6 47.3	15 30 43.75	18 49 8.7	0.5	1.8	0.13
18	9 43.6	15 34 0.99	18 59 45.7	0.5	1.9	0.13	2	6 43.4	15 30 43.62	18 49 9.5	0.5	1.8	0.13
19	9 39.6	15 33 52.93	18 59 18.8	0.5	1.9	0.13	3	6 39.5	15 30 43.70	18 49 11.1	0.5	1.8	0.13
20	9 35.5	15 33 45.00	18 58 52.4	0.5	1.9	0.13	4	6 35.6	15 30 44.00	18 49 13.5	0.5	1.8	0.13
21	9 31.4	15 33 37.20	18 58 26.4	0.5	1.9	0.13	5	6 31.6	15 30 44.51	18 49 16.5	0.5	1.8	0.13
22	9 27.4	15 33 29.54	18 58 0.9	0.5	1.9	0.13	6	6 27.7	15 30 45.23	18 49 20.3	0.5	1.8	0.13
23	9 23.3	15 33 22.02	18 57 35.9	0.5	1.9	0.13	7	6 23.8	15 30 46.16	18 49 24.9	0.5	1.8	0.13
24	9 19.3	15 33 14.64	18 57 11.4	0.5	1.9	0.13	8	6 19.9	15 30 47.31	18 49 30.2	0.5	1.8	0.13
25	9 15.2	15 33 7.40	18 56 47.3	0.5	1.9	0.13	9	6 16.0	15 30 48.66	18 49 36.3	0.5	1.8	0.13
26	9 11.2	15 33 0.31	18 56 23.7	0.5	1.9	0.13	10	6 12.1	15 30 50.23	18 49 43.1	0.5	1.8	0.13
27	9 7.1	15 32 53.38	18 56 0.7	0.5	1.9	0.13	11	6 8.2	15 30 52.01	18 49 50.7	0.5	1.8	0.13
28	9 3.1	15 32 46.61	18 55 38.2	0.5	1.9	0.13	12	6 4.3	15 30 54.00	18 49 59.0	0.5	1.8	0.13
29	8 59.0	15 32 39.99	18 55 16.2	0.5	1.9	0.13	13	6 0.4	15 30 56.20	18 50 8.1	0.5	1.8	0.13
30	8 55.0	15 32 33.53	18 54 54.8	0.5	1.9	0.13	14	5 56.5	15 30 58.61	18 50 17.9	0.5	1.8	0.13
July 1	8 51.0	15 32 27.24	18 54 34.0	0.5	1.9	0.13	15	5 52.6	15 31 1.23	18 50 28.4	0.5	1.8	0.13
2	8 46.9	15 32 21.11	18 54 13.7	0.5	1.9	0.13	16	5 48.7	15 31 4.05	18 50 39.6	0.5	1.8	0.13

FOR TRANSIT AT WASHINGTON.

Data.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.	Data.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.
Jan. 0	h m	h m s	° ' "	"	"	s	Feb. 14	h m	h m s	° ' "	"	"	s
1	10 25.5	5 9 39.47	+21 30 18.8	0.3	1.3	0.10	15	7 25.2	5 6 20.75	+21 28 4.5	0.3	1.3	0.09
2	10 21.4	5 9 32.90	21 30 12.5	0.3	1.3	0.10	16	7 21.3	5 6 19.18	21 28 5.7	0.3	1.3	0.09
3	10 17.4	5 9 26.42	21 30 6.3	0.3	1.3	0.10	17	7 17.3	5 6 17.75	21 28 7.1	0.3	1.3	0.09
4	10 13.3	5 9 20.00	21 30 0.1	0.3	1.3	0.10	18	7 13.3	5 6 16.45	21 28 8.7	0.3	1.3	0.09
5	10 9.3	5 9 13.65	21 29 54.2	0.3	1.3	0.10	19	7 9.4	5 6 15.30	21 28 10.4	0.3	1.3	0.09
6	10 5.3	5 9 7.38	+21 29 48.4	0.3	1.3	0.10	20	7 5.5	5 6 14.30	+21 28 12.3	0.3	1.3	0.09
7	10 1.2	5 9 1.18	21 29 42.7	0.3	1.3	0.10	21	7 1.5	5 6 13.44	21 28 14.4	0.3	1.3	0.09
8	9 57.2	5 8 55.05	21 29 37.2	0.3	1.3	0.10	22	6 57.6	5 6 12.73	21 28 16.7	0.3	1.3	0.09
9	9 53.1	5 8 49.00	21 29 31.8	0.3	1.3	0.10	23	6 53.6	5 6 12.16	21 28 19.3	0.3	1.3	0.09
10	9 49.1	5 8 43.03	21 29 26.5	0.3	1.3	0.10	24	6 49.7	5 6 11.74	21 28 22.1	0.3	1.3	0.09
11	9 45.1	5 8 37.15	+21 29 21.3	0.3	1.3	0.09	25	6 45.8	5 6 11.45	+21 28 25.1	0.3	1.3	0.09
12	9 41.1	5 8 31.36	21 29 16.2	0.3	1.3	0.09	26	6 41.8	5 6 11.32	21 28 28.3	0.3	1.3	0.09
13	9 37.0	5 8 25.67	21 29 11.3	0.3	1.3	0.09	27	6 37.9	5 6 11.33	21 28 31.6	0.3	1.3	0.09
14	9 33.0	5 8 20.07	21 29 6.5	0.3	1.3	0.09	28	6 34.0	5 6 11.50	21 28 35.2	0.3	1.3	0.09
15	9 29.0	5 8 14.57	21 29 1.9	0.3	1.3	0.09	Sept. 1	18 39.7	5 27 15.96	+21 52 53.3	0.3	1.3	0.09
16	9 25.0	5 8 9.16	+21 28 57.5	0.3	1.3	0.09	2	18 35.8	5 27 19.13	21 52 53.6	0.3	1.3	0.09
17	9 20.9	5 8 3.84	21 28 53.2	0.3	1.3	0.09	3	18 31.9	5 27 22.16	21 52 53.7	0.3	1.3	0.09
18	9 16.9	5 7 58.62	21 28 49.1	0.3	1.3	0.09	4	18 28.0	5 27 25.05	21 52 53.7	0.3	1.3	0.09
19	9 12.9	5 7 53.51	21 28 45.1	0.3	1.3	0.09	5	18 24.2	5 27 27.81	21 52 53.5	0.3	1.3	0.09
20	9 8.9	5 7 48.51	21 28 41.3	0.3	1.3	0.09	6	18 20.3	5 27 30.43	+21 52 53.2	0.3	1.3	0.09
21	9 4.9	5 7 43.62	+21 28 37.6	0.3	1.3	0.09	7	18 16.4	5 27 32.91	21 52 52.8	0.3	1.3	0.09
22	8 56.9	5 7 38.83	21 28 34.1	0.3	1.3	0.09	8	18 12.5	5 27 35.25	21 52 52.3	0.3	1.3	0.09
23	8 52.9	5 7 34.15	21 28 30.8	0.3	1.3	0.09	9	18 8.6	5 27 37.45	21 52 51.7	0.3	1.3	0.09
24	8 48.9	5 7 29.58	21 28 27.6	0.3	1.3	0.09	10	18 4.7	5 27 39.51	21 52 51.0	0.3	1.3	0.09
25	8 44.9	5 7 25.12	21 28 24.6	0.3	1.3	0.09	11	18 0.8	5 27 41.43	+21 52 50.2	0.3	1.3	0.09
26	8 40.9	5 7 20.77	+21 28 21.8	0.3	1.3	0.09	12	17 56.9	5 27 43.21	21 52 49.3	0.3	1.3	0.09
27	8 36.9	5 7 16.54	21 28 19.2	0.3	1.3	0.09	13	17 53.0	5 27 44.84	21 52 48.2	0.3	1.3	0.09
28	8 32.9	5 7 12.44	21 28 16.7	0.3	1.3	0.09	14	17 49.1	5 27 46.33	21 52 47.0	0.3	1.3	0.09
29	8 28.9	5 7 8.46	21 28 14.4	0.3	1.3	0.09	15	17 45.2	5 27 47.68	21 52 45.7	0.3	1.3	0.09
30	8 24.9	5 7 4.61	21 28 12.3	0.3	1.3	0.09	16	17 41.3	5 27 48.89	+21 52 44.2	0.3	1.3	0.09
31	8 20.9	5 7 0.88	+21 28 10.4	0.3	1.3	0.09	17	17 37.3	5 27 49.96	21 52 42.6	0.3	1.3	0.09
Feb. 1	8 16.9	5 6 57.27	21 28 8.7	0.3	1.3	0.09	18	17 33.4	5 27 50.88	21 52 40.9	0.3	1.3	0.09
2	8 12.9	5 6 53.79	21 28 7.1	0.3	1.3	0.09	19	17 29.5	5 27 51.65	21 52 39.1	0.3	1.3	0.09
3	8 8.9	5 6 50.44	21 28 5.8	0.3	1.3	0.09	20	17 25.6	5 27 52.28	21 52 37.2	0.3	1.3	0.09
4	8 4.9	5 6 47.22	21 28 4.7	0.3	1.3	0.09	21	17 21.7	5 27 52.76	+21 52 35.2	0.3	1.3	0.09
5	8 0.9	5 6 44.14	+21 28 3.8	0.3	1.3	0.09	22	17 17.8	5 27 53.10	21 52 33.1	0.3	1.3	0.09
6	7 57.0	5 6 41.19	21 28 3.0	0.3	1.3	0.09	23	17 13.8	5 27 53.30	21 52 30.8	0.3	1.3	0.09
7	7 53.0	5 6 38.37	21 28 2.4	0.3	1.3	0.09	24	17 9.9	5 27 53.36	21 52 28.5	0.3	1.3	0.09
8	7 49.0	5 6 35.69	21 28 2.0	0.3	1.3	0.09	25	17 5.9	5 27 53.27	21 52 26.1	0.3	1.3	0.09
9	7 45.0	5 6 33.13	21 28 1.8	0.3	1.3	0.09	26	17 2.0	5 27 53.04	+21 52 23.6	0.3	1.3	0.09
10	7 41.1	5 6 30.71	+21 28 1.8	0.3	1.3	0.09	27	16 58.1	5 27 52.66	21 52 21.0	0.3	1.3	0.09
11	7 37.1	5 6 28.43	21 28 1.9	0.3	1.3	0.09	28	16 54.1	5 27 52.14	21 52 18.3	0.3	1.3	0.09
12	7 33.1	5 6 26.30	21 28 2.2	0.3	1.3	0.09	29	16 50.2	5 27 51.47	21 52 15.5	0.3	1.3	0.09
13	7 29.2	5 6 24.31	21 28 2.7	0.3	1.3	0.09	30	16 46.3	5 27 50.66	21 52 12.5	0.3	1.3	0.09
14	7 25.2	5 6 22.46	21 28 3.5	0.3	1.3	0.09	Oct. 1	16 42.3	5 27 49.70	+21 52 9.4	0.3	1.3	0.09
15	7 21.3	5 6 20.75	+21 28 4.5	0.3	1.3	0.09	2	16 38.4	5 27 48.61	+21 52 6.3	0.3	1.3	0.09

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.
Oct. 1	h m	h m s	° ' "	"	"	"	Nov. 16	h m	h m s	° ' "	"	"	"
2	16 42.3	5 27 49.70	+21 52 9.4	0.3	1.3	0.09	17	13 38.4	5 24 48.30	+21 48 22.0	0.3	1.3	0.10
3	16 38.4	5 27 48.61	21 52 6.3	0.3	1.3	0.09	18	13 34.4	5 24 41.92	21 48 15.6	0.3	1.3	0.10
4	16 34.4	5 27 47.38	21 52 3.1	0.3	1.3	0.09	19	13 30.4	5 24 35.47	21 48 9.2	0.3	1.3	0.10
5	16 30.5	5 27 46.01	21 51 59.8	0.3	1.3	0.09	20	13 26.3	5 24 28.97	21 48 2.9	0.3	1.3	0.10
6	16 26.5	5 27 44.50	21 51 56.4	0.3	1.3	0.09	21	13 22.3	5 24 22.40	21 47 56.5	0.3	1.3	0.10
7	16 22.5	5 27 42.84	+21 51 52.9	0.3	1.3	0.09	22	13 18.2	5 24 15.78	+21 47 50.1	0.3	1.3	0.10
8	16 18.6	5 27 41.04	21 51 49.3	0.3	1.3	0.09	23	13 14.2	5 24 9.09	21 47 43.7	0.3	1.3	0.10
9	16 14.6	5 27 39.10	21 51 45.6	0.3	1.3	0.09	24	13 10.1	5 24 2.34	21 47 37.4	0.3	1.3	0.10
10	16 10.6	5 27 37.03	21 51 41.8	0.3	1.3	0.09	25	13 6.1	5 23 55.53	21 47 31.0	0.3	1.3	0.10
11	16 6.7	5 27 34.82	21 51 37.9	0.3	1.3	0.09	26	13 2.0	5 23 48.66	21 47 24.5	0.3	1.3	0.10
12	16 2.7	5 27 32.48	+21 51 33.9	0.3	1.3	0.09	27	12 58.0	5 23 41.75	+21 47 18.1	0.3	1.3	0.10
13	15 58.7	5 27 30.00	21 51 29.8	0.3	1.3	0.09	28	12 54.0	5 23 34.80	21 47 11.6	0.3	1.3	0.10
14	15 54.8	5 27 27.39	21 51 25.6	0.3	1.3	0.09	29	12 49.9	5 23 27.81	21 47 5.2	0.3	1.3	0.10
15	15 50.8	5 27 24.65	21 51 21.3	0.3	1.3	0.09	30	12 45.9	5 23 20.78	21 46 58.7	0.3	1.3	0.10
16	15 46.8	5 27 21.78	21 51 16.9	0.3	1.3	0.09	1	12 41.8	5 23 13.72	21 46 52.2	0.3	1.3	0.10
17	15 42.8	5 27 18.77	+21 51 12.5	0.3	1.3	0.09	2	12 37.8	5 23 6.62	+21 46 45.7	0.3	1.3	0.10
18	15 38.8	5 27 15.62	21 51 8.0	0.3	1.3	0.09	3	12 33.7	5 22 59.48	21 46 39.2	0.3	1.3	0.10
19	15 34.9	5 27 12.35	21 51 3.4	0.3	1.3	0.09	4	12 29.7	5 22 52.30	21 46 32.7	0.3	1.3	0.10
20	15 30.9	5 27 8.95	21 50 58.8	0.3	1.3	0.09	5	12 25.6	5 22 45.11	21 46 26.3	0.3	1.3	0.10
21	15 26.9	5 27 5.44	21 50 54.1	0.3	1.3	0.09	6	12 21.6	5 22 37.90	21 46 19.9	0.3	1.3	0.10
22	15 22.9	5 27 1.80	+21 50 49.3	0.3	1.3	0.09	7	12 17.5	5 22 30.67	+21 46 13.5	0.3	1.3	0.10
23	15 18.9	5 26 58.03	21 50 44.4	0.3	1.3	0.09	8	12 13.5	5 22 23.43	21 46 7.1	0.3	1.3	0.10
24	15 14.9	5 26 54.13	21 50 39.4	0.3	1.3	0.09	9	12 9.4	5 22 16.18	21 46 0.7	0.3	1.3	0.10
25	15 10.9	5 26 50.09	21 50 34.3	0.3	1.3	0.09	10	12 5.4	5 22 8.91	21 45 54.4	0.3	1.3	0.10
26	15 6.9	5 26 45.94	21 50 29.1	0.3	1.3	0.09	11	12 1.3	5 22 1.62	21 45 48.0	0.3	1.3	0.10
27	15 2.9	5 26 41.68	+21 50 23.9	0.3	1.3	0.09	12	11 57.2	5 21 54.32	+21 45 41.7	0.3	1.3	0.10
28	14 58.9	5 26 37.30	21 50 18.7	0.3	1.3	0.09	13	11 53.2	5 21 47.03	21 45 35.4	0.3	1.3	0.10
29	14 54.9	5 26 32.81	21 50 13.4	0.3	1.3	0.09	14	11 49.1	5 21 39.75	21 45 29.2	0.3	1.3	0.10
30	14 50.9	5 26 28.21	21 50 8.1	0.3	1.3	0.09	15	11 45.1	5 21 32.47	21 45 23.0	0.3	1.3	0.10
31	14 46.9	5 26 23.50	21 50 2.7	0.3	1.3	0.09	16	11 41.0	5 21 25.20	21 45 16.8	0.3	1.3	0.10
Nov. 1	14 42.8	5 26 18.68	+21 49 57.2	0.3	1.3	0.09	17	11 37.0	5 21 17.93	+21 45 10.7	0.3	1.3	0.10
2	14 38.8	5 26 13.75	21 49 51.6	0.3	1.3	0.09	18	11 32.9	5 21 10.66	21 45 4.6	0.3	1.3	0.10
3	14 34.8	5 26 8.71	21 49 46.0	0.3	1.3	0.10	19	11 28.9	5 21 3.40	21 44 58.6	0.3	1.3	0.10
4	14 30.8	5 26 3.57	21 49 40.3	0.3	1.3	0.10	20	11 24.8	5 20 56.17	21 44 52.6	0.3	1.3	0.10
5	14 26.8	5 25 58.34	21 49 34.6	0.3	1.3	0.10	21	11 20.8	5 20 48.96	21 44 46.7	0.3	1.3	0.10
6	14 22.8	5 25 53.00	+21 49 28.8	0.3	1.3	0.10	22	11 16.7	5 20 41.78	+21 44 40.8	0.3	1.3	0.10
7	14 18.7	5 25 47.56	21 49 22.9	0.3	1.3	0.10	23	11 12.7	5 20 34.63	21 44 35.0	0.3	1.3	0.10
8	14 14.7	5 25 42.02	21 49 17.0	0.3	1.3	0.10	24	11 8.6	5 20 27.51	21 44 29.3	0.3	1.3	0.10
9	14 10.7	5 25 36.39	21 49 11.0	0.3	1.3	0.10	25	11 4.6	5 20 20.42	21 44 23.6	0.3	1.3	0.10
10	14 6.7	5 25 30.69	21 49 5.0	0.3	1.3	0.10	26	11 0.5	5 20 13.37	21 44 18.0	0.3	1.3	0.10
11	14 2.6	5 25 24.90	+21 48 59.0	0.3	1.3	0.10	27	10 56.5	5 20 6.35	+21 44 12.4	0.3	1.3	0.10
12	13 58.6	5 25 19.03	21 48 53.0	0.3	1.3	0.10	28	10 52.4	5 19 59.37	21 44 6.9	0.3	1.3	0.10
13	13 54.6	5 25 13.06	21 48 46.9	0.3	1.3	0.10	29	10 48.4	5 19 52.44	21 44 1.5	0.3	1.3	0.10
14	13 50.5	5 25 7.01	21 48 40.8	0.3	1.3	0.10	30	10 44.3	5 19 45.57	21 43 56.2	0.3	1.3	0.10
15	13 46.5	5 25 0.86	21 48 34.6	0.3	1.3	0.10	31	10 40.3	5 19 38.75	21 43 51.0	0.3	1.3	0.10
16	13 42.5	5 24 54.63	+21 48 28.3	0.3	1.3	0.10	32	10 36.2	5 19 31.98	+21 43 45.9	0.3	1.3	0.10
	13 38.4	5 24 48.30	+21 48 22.0	0.3	1.3	0.10		10 32.2	5 19 25.26	+21 43 40.8	0.3	1.3	0.10

PART III



PHENOMENA

ECLIPSES, 1897.

In the year 1897 there will be two eclipses, both of the sun.

I.—*An Annular Eclipse of the Sun*, 1897, February 1, visible at Washington as a partial eclipse, towards sunset.

ELEMENTS OF THE ECLIPSE.

Greenwich mean time of δ in right ascension, February 1				^d 8	^h 6	^m 40.8	
Sun and moon's R. A.	^h 21	^m 3	3.13	Hourly motions	^s 10.16	and 128.73	
Sun's declination	16°	50'	23.8 S.	Hourly motion	0°	43.4 N.	
Moon's declination	17°	2'	6.7 S.	Hourly motion	12°	20.2 N.	
Sun's equa. hor. parallax			8.9	Sun's true semidiameter	16	13.6	
Moon's equa. hor. parallax	57	6.3		Moon's true semidiameter	15	32.9	

CIRCUMSTANCES OF THE ECLIPSE.

		^d	^h	^m	Longitude from Greenwich.	Latitude.
Eclipse begins	February	1	5	23.0	176° 33.1 W.	28° 1.8 S.
Central eclipse begins		1	6	25.9	166 10.2 E.	31 47.3 S.
Central eclipse at noon		1	8	6.7	118 11.5 W.	28 52.8 S.
Central eclipse ends		1	10	4.9	61 5.4 W.	10 54.3 N.
Eclipse ends		1	11	8.0	78 3.7 W.	14 42.9 N.

II.—*An Annular Eclipse of the Sun*, 1897, July 29, visible at Washington as a partial eclipse.

ELEMENTS OF THE ECLIPSE.

Greenwich mean time of δ in right ascension, July 29				^d 3	^h 59	^m 47.5	
Sun and moon's R. A.	^h 8	^m 36	27.72	Hourly motions	^s 9.77	and 128.08	
Sun's declination	18°	36'	15.2 N.	Hourly motion	0°	36.0 S.	
Moon's declination	18°	32'	22.7 N.	Hourly motion	10°	56.5 S.	
Sun's equa. hor. parallax			8.7	Sun's true semidiameter	15	45.5	
Moon's equa. hor. parallax	56	20.9		Moon's true semidiameter	15	20.5	

CIRCUMSTANCES OF THE ECLIPSE.

		^d	^h	^m	Longitude from Greenwich.	Latitude.
Eclipse begins	July	29	1	2.0	109° 49.6 W.	16° 57.0 N.
Central eclipse begins		29	2	4.7	125 2.0 W.	15 39.3 N.
Central eclipse at noon		29	3	59.8	58 23.6 W.	14 44.6 N.
Central eclipse ends		29	5	49.7	3 57.7 W.	22 43.2 S.
Eclipse ends		29	6	52.1	19 6.4 W.	21 32.3 S.

The regions within which the eclipses of the sun are visible, are laid down on the accompanying charts, from which, by means of the dotted lines, may also be found the Greenwich times of beginning and ending, within fifteen or twenty minutes.

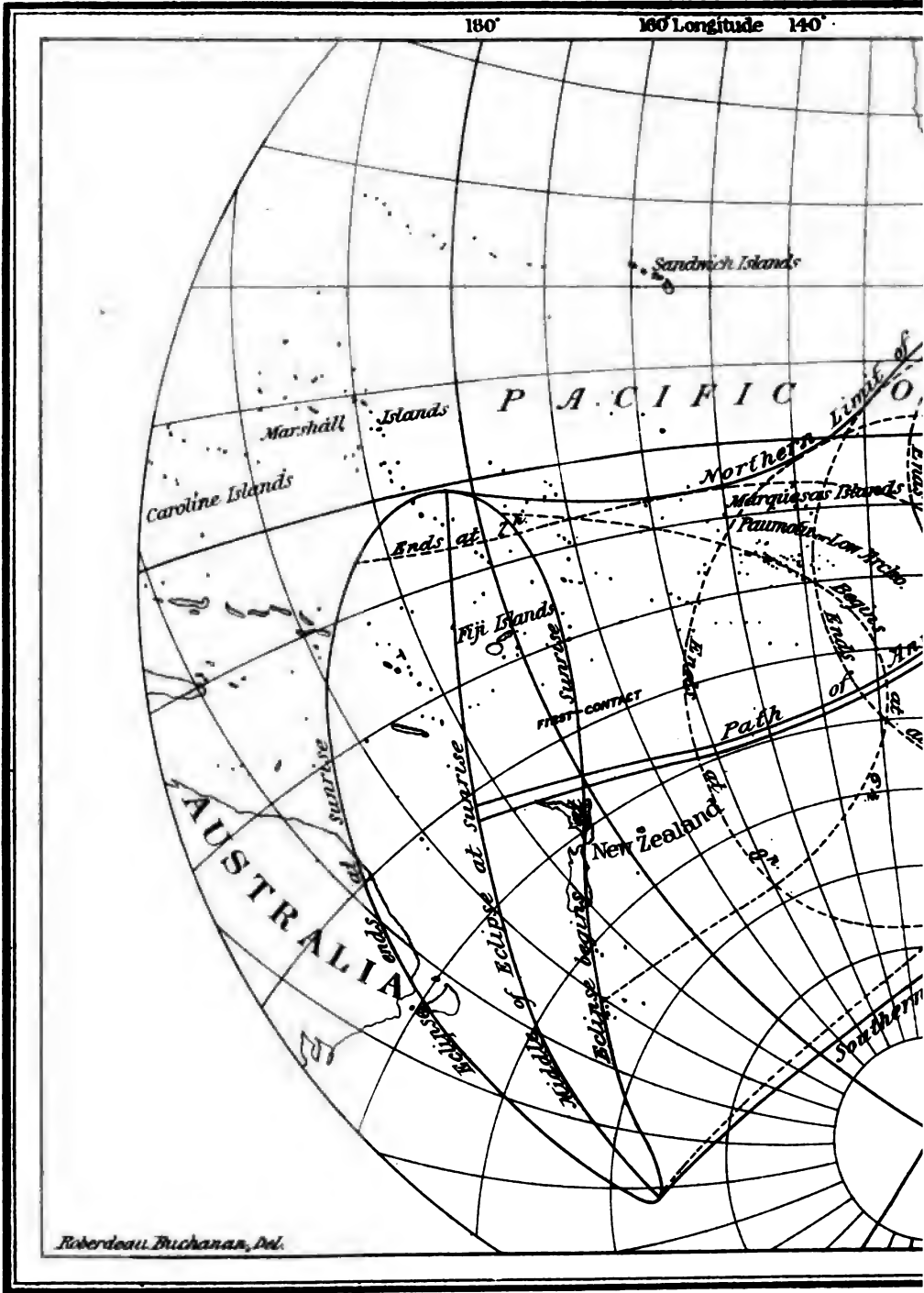
**BESSELIAN ELEMENTS OF THE ANNULAR ECLIPSE
OF THE SUN, 1897, FEBRUARY 1.**

Greenwich Mean Time.	Co-ordinates of Centre of Shadow on Fundamental Plane.		Direction of Axis of Shadow.			Radius of Penumbra and Shadow On Fundamental Plane.	
	x	y	Log sin d	Log cos d	μ	l	l''
h m					° ' .		
5 20	-1.38266	-0.77097	-9.46274	+9.98089	76 31.3	+0.55748	+0.01151
30	1.29970	0.73711	9.46269	9.98090	79 1.3	0.55751	0.01154
40	1.21674	0.70325	9.46265	9.98090	81 31.3	0.55754	0.01157
50	1.13378	0.66938	9.46260	9.98090	84 1.3	0.55757	0.01160
6 0	-1.05083	-0.63550	-9.46255	+9.98091	86 31.3	+0.55760	+0.01163
10	0.96787	0.60161	9.46250	9.98091	89 1.3	0.55763	0.01166
20	0.88491	0.56771	9.46245	9.98092	91 31.3	0.55765	0.01169
30	0.80195	0.53380	9.46240	9.98092	94 1.3	0.55768	0.01171
40	0.71899	0.49989	9.46236	9.98093	96 31.3	0.55770	0.01174
50	0.63604	0.46598	9.46231	9.98093	99 1.3	0.55773	0.01177
7 0	-0.55309	-0.43206	-9.46226	+9.98094	101 31.3	+0.55775	+0.01179
10	0.47014	0.39813	9.46221	9.98094	104 1.3	0.55778	0.01182
20	0.38719	0.36419	9.46216	9.98094	106 31.3	0.55780	0.01184
30	0.30424	0.33025	9.46211	9.98095	109 1.3	0.55783	0.01186
40	0.22129	0.29630	9.46207	9.98095	111 31.3	0.55785	0.01188
50	0.13835	0.26234	9.46202	9.98096	114 1.3	0.55787	0.01190
8 0	-0.05541	-0.22838	-9.46197	+9.98096	116 31.3	+0.55789	+0.01192
10	+0.02752	0.19441	9.46192	9.98096	119 1.3	0.55791	0.01194
20	0.11045	0.16044	9.46187	9.98097	121 31.3	0.55793	0.01196
30	0.19337	0.12646	9.46182	9.98097	124 1.3	0.55795	0.01198
40	0.27629	0.09247	9.46178	9.98098	126 31.3	0.55797	0.01200
50	0.35921	0.05848	9.46173	9.98098	129 1.3	0.55799	0.01202
9 0	+0.44213	-0.02448	-9.46168	+9.98099	131 31.3	+0.55800	+0.01203
10	0.52504	+0.00953	9.46163	9.98099	134 1.3	0.55802	0.01205
20	0.60795	0.04354	9.46158	9.98100	136 31.3	0.55803	0.01206
30	0.69086	0.07756	9.46153	9.98100	139 1.3	0.55805	0.01208
40	0.77376	0.11158	9.46148	9.98101	141 31.3	0.55806	0.01209
50	0.85666	0.14560	9.46143	9.98101	144 1.3	0.55808	0.01211
10 0	+0.93955	+0.17963	-9.46138	+9.98102	146 31.3	+0.55809	+0.01212
10	1.02243	0.21367	9.46133	9.98102	149 1.3	0.55811	0.01214
20	1.10531	0.24771	9.46128	9.98103	151 31.3	0.55812	0.01215
30	1.18818	0.28176	9.46124	9.98103	154 1.3	0.55813	0.01216
40	1.27105	0.31581	9.46119	9.98104	156 31.3	0.55814	0.01217
50	1.35391	0.34987	9.46114	9.98104	159 1.3	0.55815	0.01218
11 0	+1.43676	+0.38393	-9.46110	+9.98105	161 31.3	+0.55816	+0.01219
10	+1.51960	+0.41799	-9.46105	+9.98105	164 1.3	+0.55817	+0.01220
Greenwich Mean Time.	Log Δx for 1 Minute.		Log Δy for 1 Minute.		Log $\Delta \mu$ for 1 Minute.	Log Tangents of Angles of Cones—	
						Penumbra.	Shadow.
h m							
5 0	+ 7.9189		+ 7.5294		+ 1.1761	+ 7.67620	+ 7.67403
6 0	7.9189		7.5300		1.1761	7.67620	7.67403
7 0	7.9188		7.5306		1.1761	7.67620	7.67403
8 0	7.9187		7.5310		1.1761	7.67619	7.67403
9 0	7.9186		7.5315		1.1761	7.67619	7.67402
10 0	7.9185		7.5319		1.1761	7.67619	7.67402
11 0	7.9183		7.5323		1.1761	7.67619	7.67402
12 0	+ 7.9180		+ 7.5326		+ 1.1761	+ 7.67618	+ 7.67402

**PATH OF THE ANNULUS DURING THE ANNULAR ECLIPSE
OF THE SUN, 1897, FEBRUARY 1.**

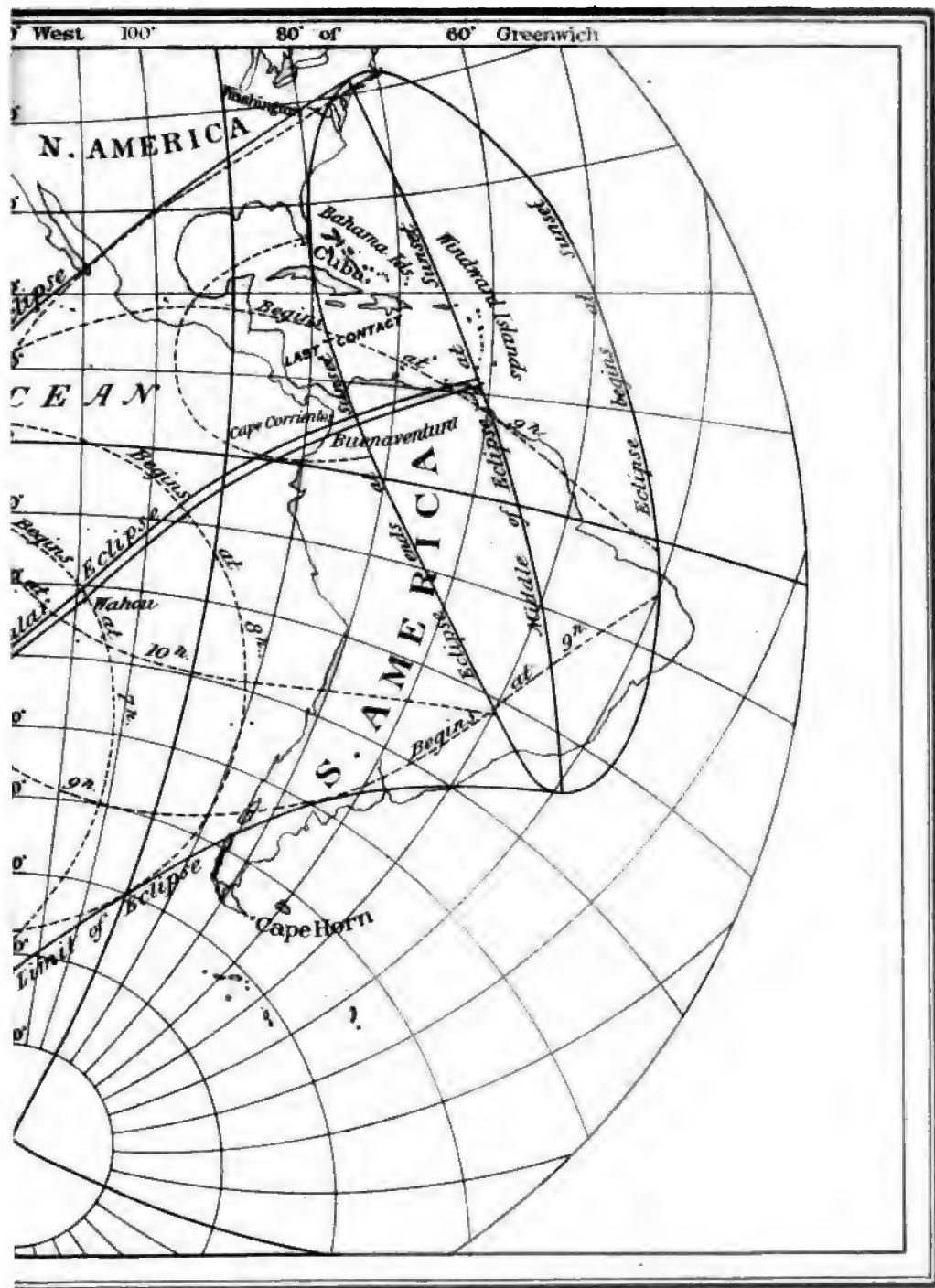
Greenwich Mean Time.	Northern Limit of Annulus Path.		Central Line.		Southern Limit of Annulus Path.		Duration of Annulus on Central Line.
	Latitude.	Longitude from Greenwich.	Latitude.	Longitude from Greenwich.	Latitude.	Longitude from Greenwich.	
Limits.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	m s
6 ^h 30 ^m	-31 8.0	166 34.5 E.	-31 47.3	166 10.2 E.	-32 25.4	165 48.8 E.	
35	35 44.9	176 10.2 W.	36 12.2	177 4.3 W.	36 29.5	177 58.4 W.	2 32.9
40	37 8.5	168 23.8	37 39.4	168 56.2	38 10.3	169 28.6	2 33.8
45	37 51.2	162 32.2	38 22.8	162 54.0	38 54.4	163 15.8	2 34.5
50	38 12.4	157 39.5	38 43.7	157 54.1	39 15.0	158 8.7	2 35.2
55	38 18.7	153 29.5	38 49.7	153 39.0	39 20.7	153 48.5	2 35.8
	38 14.5	149 45.1	38 44.9	149 50.3	39 15.3	149 55.5	2 36.3
7 0	-38 1.7	146 24.4	-38 31.4	146 26.1	-39 1.1	146 27.8	2 36.8
5	37 42.3	143 20.6	38 11.2	143 19.4	38 40.1	143 18.2	2 37.1
10	37 17.2	140 31.3	37 45.3	140 27.6	38 13.4	140 23.9	2 37.3
15	36 47.1	137 54.4	37 14.4	137 48.5	37 41.7	137 42.6	2 37.5
20	36 12.7	135 28.4	36 39.2	135 20.6	37 5.7	135 12.8	2 37.6
25	35 34.7	133 11.9	36 0.4	133 2.5	36 26.1	132 53.1	2 37.7
30	-34 53.2	131 3.8	-35 18.2	130 53.0	-35 43.2	130 42.2	2 37.7
35	34 9.0	129 3.1	34 33.3	128 51.1	34 57.6	128 39.1	2 37.6
40	33 21.9	127 9.3	33 45.5	126 56.2	34 9.1	126 43.1	2 37.5
45	32 32.3	125 21.6	32 55.2	125 7.4	33 18.1	124 53.2	2 37.4
50	31 40.4	123 39.3	32 2.7	123 24.1	32 25.0	123 8.9	2 37.3
55	30 46.3	122 1.5	31 8.0	121 45.7	31 29.7	121 29.9	2 37.2
8 0	-29 50.2	120 27.9	-30 11.4	120 11.5	-30 32.6	119 55.1	2 37.0
5	28 52.2	118 58.1	29 12.9	118 41.1	29 33.6	118 24.1	2 36.8
10	27 52.2	117 31.5	28 12.4	117 13.9	28 32.6	116 56.3	2 36.5
15	26 50.7	116 7.7	27 10.4	115 49.5	27 30.1	115 31.3	2 36.3
20	25 47.4	114 46.3	26 6.7	114 27.6	26 26.0	114 8.9	2 36.1
25	24 42.3	113 26.8	25 1.2	113 7.5	25 20.1	112 48.2	2 35.9
30	-23 35.4	112 8.7	-23 54.0	111 48.9	-24 12.6	111 29.1	2 35.7
35	22 26.7	110 51.7	22 45.1	110 31.4	23 3.5	110 11.1	2 35.4
40	21 16.3	109 35.6	21 34.5	109 14.7	21 52.7	108 53.8	2 35.2
45	20 4.1	108 19.5	20 22.0	107 58.0	20 39.9	107 36.5	2 35.1
50	18 49.8	107 3.2	19 7.5	106 41.1	19 25.2	106 19.0	2 35.1
55	17 33.6	105 45.9	17 51.2	105 23.2	18 8.8	105 0.5	2 35.0
9 0	-16 15.2	104 27.1	-16 32.7	104 3.8	-16 50.2	103 40.5	2 34.9
5	14 54.3	103 6.5	15 11.8	102 42.5	15 29.3	102 18.5	2 35.0
10	13 31.0	101 42.8	13 48.5	101 18.1	14 6.0	100 53.4	2 35.1
15	12 5.2	100 16.0	12 22.7	99 50.3	12 40.2	99 24.6	2 35.1
20	10 36.2	98 44.1	10 53.7	98 17.3	11 11.2	97 50.5	2 35.2
25	9 3.7	97 5.1	9 21.3	96 37.3	9 38.9	96 9.5	2 35.2
30	-7 26.7	95 18.2	-7 44.4	94 49.2	-8 2.1	94 20.2	2 35.2
35	5 45.0	93 21.4	6 2.8	92 50.8	6 20.6	92 20.2	2 35.4
40	3 57.0	91 12.0	4 15.0	90 39.1	4 33.0	90 6.2	2 35.6
45	-2 1.4	88 40.8	2 19.5	88 5.6	2 37.6	87 30.4	2 35.8
50	+0 3.7	85 44.1	-0 14.4	85 5.2	-0 32.5	84 26.3	2 36.1
55	2 27.5	82 1.4	+2 9.7	81 16.5	+1 51.9	80 31.6	2 36.3
10 0	+5 19.2	76 58.3	+5 3.6	75 56.5	+4 48.0	74 57.7	2 36.5
Limits.	+11 21.2	61 19.3 W.	+10 54.3	61 5.4 W.	+10 15.1	60 46.7 W.	

ANNULAR ECLIPSE



NOTE: The hours of beginning and

FEBRUARY 1st 1897.



ending are expressed in Greenwich Mean Time

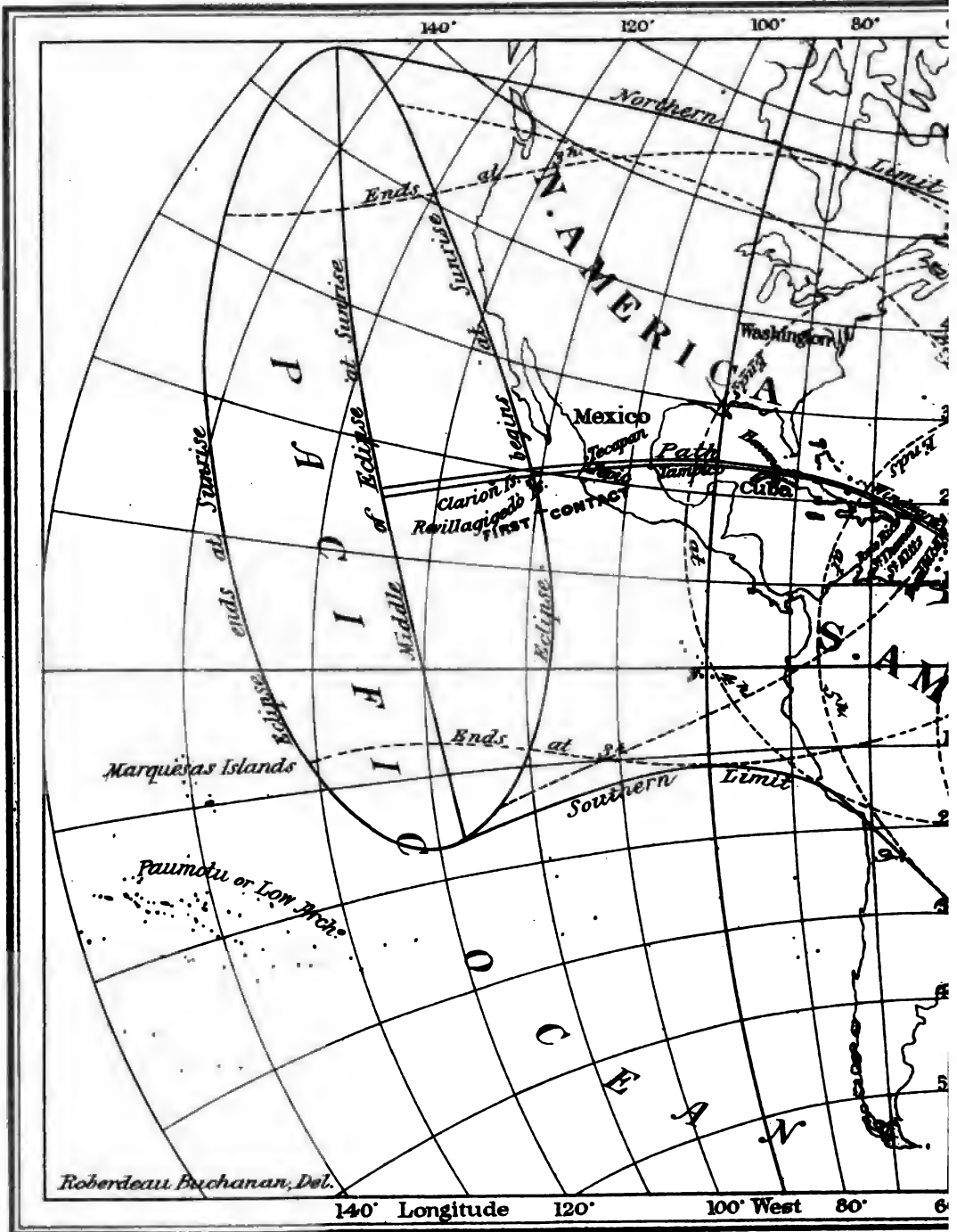
**BESSELIAN ELEMENTS OF THE ANNULAR ECLIPSE
OF THE SUN, 1897, JULY 29.**

Greenwich Mean Time.	Co-ordinates of Centre of Shadow on Fundamental Plane.		Direction of Axis of Shadow.			Radius of Penumbra and Shadow On Fundamental Plane.	
	x	y	$\text{Log sin } d$	$\text{Log cos } d$	μ	l	l'
h m							
1 0	-1.49510	+0.48130	+9.50448	+9.97662	13 26.4	+0.55362	+0.00767
10	1.41195	0.45075	9.50444	9.97662	15 56.5	0.55361	0.00766
20	1.32880	0.42020	9.50441	9.97663	18 26.5	0.55360	0.00765
30	1.24565	0.38964	9.50437	9.97663	20 56.5	0.55359	0.00764
40	1.16249	0.35908	9.50433	9.97663	23 26.5	0.55358	0.00763
50	1.07933	0.32851	9.50430	9.97664	25 56.5	0.55357	0.00762
2 0	-0.99617	+0.29793	+9.50426	+9.97664	28 26.5	+0.55356	+0.00761
10	0.91301	0.26735	9.50423	9.97665	30 56.6	0.55355	0.00760
20	0.82985	0.23675	9.50419	9.97665	33 26.6	0.55354	0.00759
30	0.74669	0.20614	9.50416	9.97666	35 56.6	0.55352	0.00758
40	0.66353	0.17553	9.50412	9.97666	38 26.6	0.55351	0.00756
50	0.58037	0.14491	9.50409	9.97667	40 56.6	0.55350	0.00755
3 0	-0.49721	+0.11428	+9.50405	+9.97667	43 26.6	+0.55348	+0.00753
10	0.41405	0.08365	9.50402	9.97668	45 56.6	0.55347	0.00752
20	0.33089	0.05301	9.50398	9.97668	48 26.7	0.55345	0.00750
30	0.24773	+0.02237	9.50394	9.97668	50 56.7	0.55343	0.00748
40	0.16457	-0.00828	9.50391	9.97669	53 26.7	0.55342	0.00747
50	-0.08141	0.03893	9.50387	9.97669	55 56.7	0.55340	0.00745
4 0	+0.00174	-0.06959	+9.50383	+9.97669	58 26.7	+0.55338	+0.00743
10	0.08489	0.10025	9.50379	9.97670	60 56.7	0.55336	0.00741
20	0.16804	0.13092	9.50376	9.97670	63 26.8	0.55334	0.00739
30	0.25119	0.16160	9.50372	9.97670	65 56.8	0.55332	0.00737
40	0.33434	0.19229	9.50369	9.97671	68 26.8	0.55330	0.00735
50	0.41749	0.22298	9.50365	9.97671	70 56.8	0.55327	0.00733
5 0	+0.50064	-0.25368	+9.50362	+9.97671	73 26.8	+0.55325	+0.00731
10	0.58379	0.28439	9.50358	9.97672	75 56.8	0.55323	0.00729
20	0.66694	0.31510	9.50355	9.97672	78 26.9	0.55321	0.00726
30	0.75008	0.34582	9.50351	9.97673	80 56.9	0.55318	0.00724
40	0.83322	0.37654	9.50347	9.97673	83 26.9	0.55316	0.00721
50	0.91636	0.40726	9.50344	9.97674	85 56.9	0.55314	0.00719
6 0	+0.99950	-0.43799	+9.50340	+9.97674	88 26.9	+0.55311	+0.00716
10	1.08263	0.46872	9.50337	9.97674	90 56.9	0.55309	0.00714
20	1.16576	0.49946	9.50333	9.97675	93 27.0	0.55306	0.00711
30	1.24888	0.53021	9.50329	9.97675	95 57.0	0.55303	0.00708
40	1.33200	0.56096	9.50326	9.97675	98 27.0	0.55300	0.00706
50	1.41511	0.59172	9.50322	9.97676	100 57.0	0.55297	0.00703
7 0	+1.49822	-0.62248	+9.50318	+9.97676	103 27.0	+0.55294	+0.00700

Greenwich Mean Time.	Log Δx for 1 Minute.	Log Δy for 1 Minute.	Log $\Delta \mu$ for 1 Minute.	Log Tangents of Angles of Cones—	
				Penumbra.	Shadow.
h m					
1 0	+ 7.9199	- 7.4849	+1.1761	+7.66345	+7.66128
2 0	7.9199	7.4855	1.1761	7.66345	7.66129
3 0	7.9199	7.4861	1.1761	7.66346	7.66129
4 0	7.9199	7.4866	1.1761	7.66346	7.66129
5 0	7.9198	7.4871	1.1761	7.66346	7.66129
6 0	7.9198	7.4876	1.1761	7.66346	7.66129
7 0	+ 7.9197	- 7.4880	+1.1761	+7.66346	+7.66130

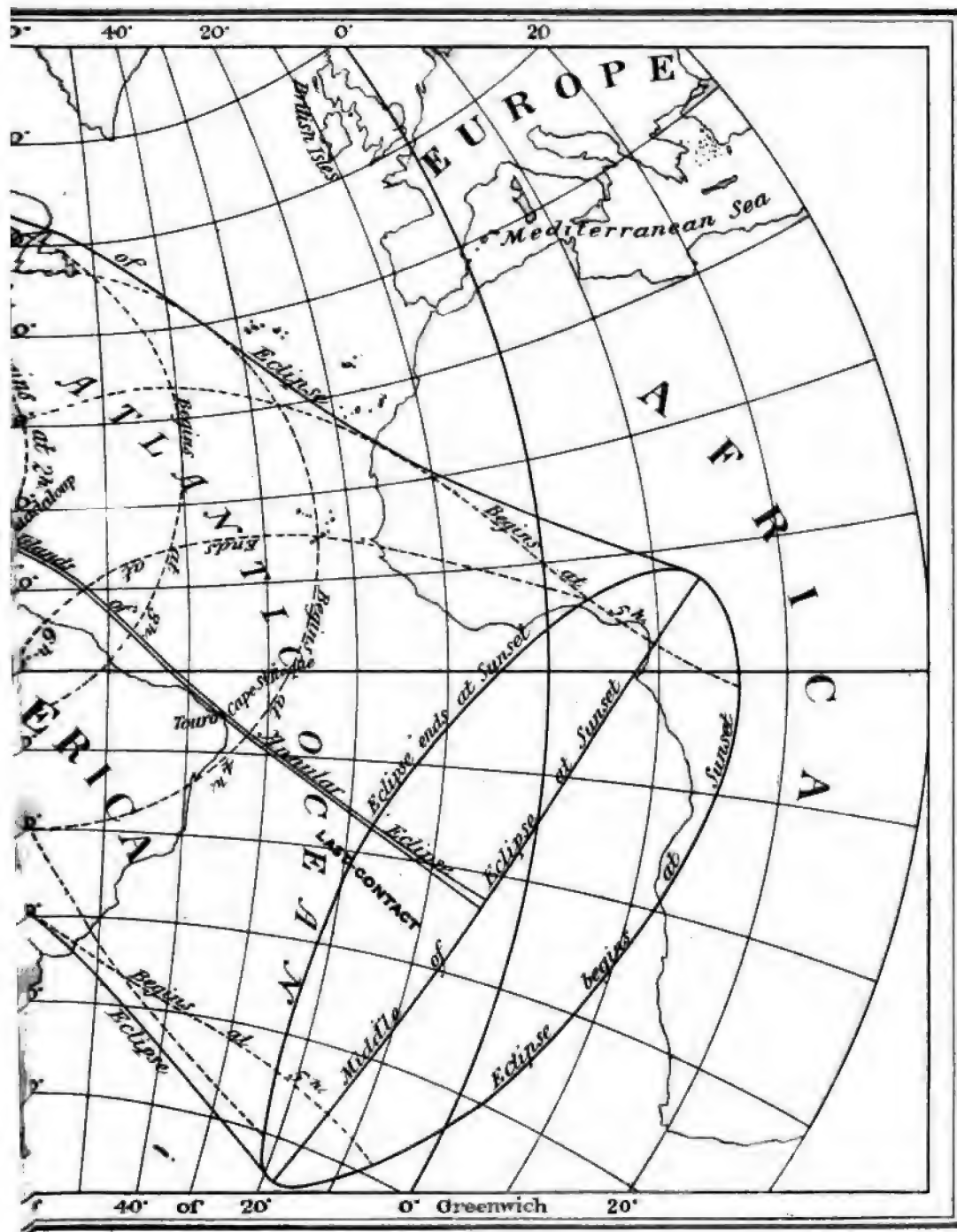
PATH OF THE ANNULUS DURING THE ANNULAR ECLIPSE OF THE SUN; 1897, JULY 29.							
Greenwich Mean Time.	Northern Limit of Annulus Path.		Central Line.		Southern Limit of Annulus Path.		Duration of Annulus on Central Line.
	Latitude.	Longitude from Greenwich.	Latitude.	Longitude from Greenwich.	Latitude.	Longitude from Greenwich.	
Limits.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	m s
2 ^h 5 ^m	+16 0.1	125 6.4 W.	+15 39.3	125 2.0 W.	+15 13.0	124 55.0 W.	
	17 24.7	121 10.8	17 10.0	120 34.3	16 55.3	119 57.8	1 41.6
10	21 2.1	108 23.8	20 42.2	108 15.8	20 22.3	108 7.8	1 37.5
15	22 21.9	102 14.0	22 2.9	102 9.0	21 43.9	102 4.0	1 34.9
20	23 7.6	97 35.4	22 49.6	97 32.4	22 31.6	97 29.4	1 32.7
25	23 34.7	93 44.6	23 17.7	93 43.2	23 0.7	93 41.8	1 30.7
30	+23 49.2	90 25.6	+23 33.1	90 25.6	+23 17.0	90 25.6	1 28.9
35	23 54.6	87 27.9	23 39.3	87 28.8	23 24.0	87 29.7	1 27.1
40	23 52.3	84 46.6	23 37.7	84 48.2	23 23.1	84 49.8	1 25.3
45	23 44.1	82 19.2	23 30.2	82 21.4	23 16.3	82 23.6	1 23.6
50	23 30.6	80 3.4	23 17.4	80 6.2	23 4.2	80 9.0	1 22.0
55	23 12.7	77 56.4	23 0.1	77 59.7	22 47.5	78 3.0	1 20.5
3 0	+22 50.7	75 57.7	+22 38.7	76 1.4	+22 26.7	76 5.1	1 19.0
5	22 25.2	74 5.8	22 13.8	74 9.9	22 2.4	74 14.0	1 17.5
10	21 56.4	72 20.2	21 45.5	72 24.6	21 34.6	72 29.0	1 16.1
15	21 24.0	70 39.8	21 13.5	70 44.4	21 3.0	70 49.0	1 14.8
20	20 49.1	69 4.1	20 39.0	69 8.9	20 28.9	69 13.7	1 13.6
25	20 12.5	67 32.5	20 2.8	67 37.5	19 53.1	67 42.5	1 12.5
30	+19 33.6	66 4.7	+19 24.2	66 9.9	+19 14.8	66 15.1	1 11.4
35	18 51.8	64 40.3	18 42.8	64 45.7	18 33.8	64 51.1	1 10.4
40	18 7.6	63 19.0	17 58.9	63 24.5	17 50.2	63 30.0	1 9.5
45	17 21.4	61 59.8	17 13.0	62 5.5	17 4.6	62 11.2	1 8.8
50	16 33.2	60 43.0	16 25.0	60 48.8	16 16.8	60 54.6	1 8.1
55	15 42.7	59 27.9	15 34.7	59 33.9	15 26.7	59 39.9	1 7.5
4 0	+14 50.3	58 14.2	+14 42.4	58 20.5	+14 34.5	58 26.8	1 7.0
5	13 55.9	57 1.8	13 48.2	57 8.3	13 40.5	57 14.8	1 6.7
10	12 59.4	55 50.3	12 51.8	55 57.0	12 44.2	56 3.7	1 6.5
15	12 0.8	54 39.5	11 53.2	54 46.2	11 45.6	54 52.9	1 6.5
20	11 0.1	53 28.7	10 52.6	53 35.5	10 45.1	53 42.3	1 6.5
25	9 57.5	52 17.8	9 50.0	52 24.7	9 42.5	52 31.6	1 6.7
30	+ 8 52.7	51 6.1	+ 8 45.2	51 13.2	+ 8 37.7	51 20.3	1 7.0
35	7 45.5	49 53.4	7 37.9	50 0.8	7 30.3	50 8.2	1 7.4
40	6 35.8	48 39.2	6 28.2	48 46.9	6 20.6	48 54.6	1 7.9
45	5 23.6	47 23.0	5 15.9	47 31.0	5 8.2	47 39.0	1 8.6
50	4 8.6	46 4.0	4 0.8	46 12.3	3 53.0	46 20.6	1 9.4
55	2 50.8	44 41.7	2 42.8	44 50.3	2 34.8	44 58.9	1 10.3
5 0	+ 1 29.5	43 14.8	+ 1 21.3	43 23.8	+ 1 13.1	43 32.8	1 11.4
5	+ 0 4.5	41 42.6	- 0 4.0	41 52.0	- 0 12.5	42 1.4	1 12.6
10	- 1 24.9	40 2.9	1 33.7	40 12.8	1 42.5	40 22.7	1 14.0
15	2 59.1	38 14.4	3 8.3	38 24.9	3 17.5	38 35.4	1 15.5
20	4 39.3	36 14.7	4 48.9	36 25.8	4 58.5	36 36.9	1 17.2
25	6 26.9	33 59.0	6 37.0	34 11.0	6 47.1	34 23.0	1 19.1
30	- 8 23.8	31 22.3	- 8 34.5	31 35.2	- 8 45.2	31 48.1	1 21.1
35	10 33.6	28 15.7	10 44.9	28 29.7	10 56.2	28 43.7	1 23.5
40	13 3.4	24 19.7	13 15.6	24 35.5	13 27.8	24 51.3	1 26.2
45	16 8.3	18 50.2	16 21.7	19 8.7	16 35.1	19 27.2	1 29.7
Limits.	-22 20.4	3 52.4 W.	-22 43.2	3 57.7 W.	-23 6.8	4 5.3 W.	

ANNULAR ECLIP

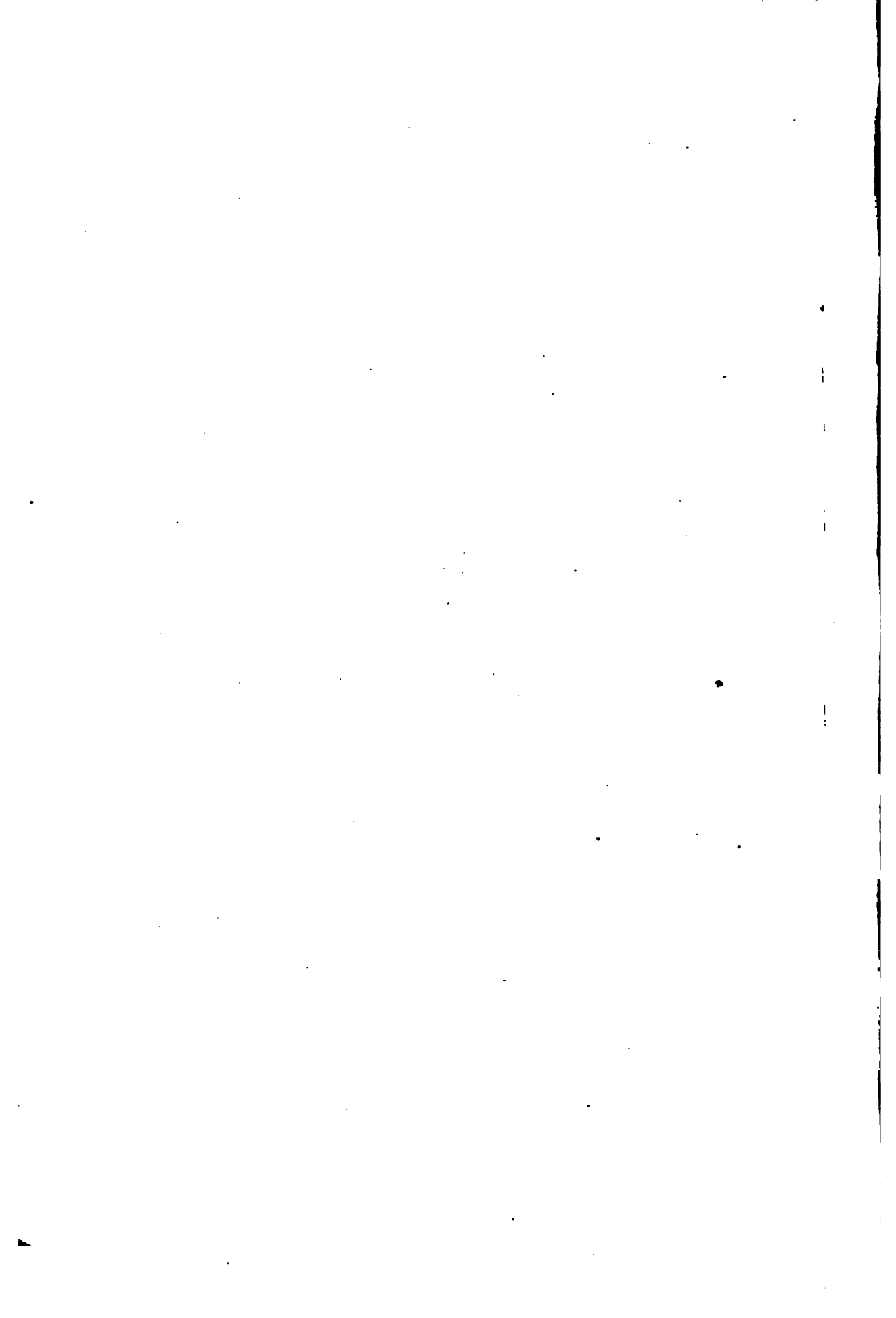


NOTE: The hours of beginning and

SE OF JULY 29th 1897.



ending are expressed in Greenwich Mean Time.



WASHINGTON MEAN TIME.

PHASES OF THE MOON.

New Moon.				First Quarter.				Full Moon.				Last Quarter.			
	d	h	m		d	h	m		d	h	m		d	h	m
January	2	12	55.2	January	10	4	37.6	January	18	3	8.7	January	25	3	0.4
February	1	3	5.1	February	9	2	17.0	February	16	17	2.8	February	23	10	35.4
March	2	18	48.0	March	10	22	20.0	March	18	4	19.5	March	24	18	51.5
April	1	11	15.7	April	9	15	18.6	April	16	13	17.2	April	23	4	39.7
May	1	3	38.1	May	9	4	28.5	May	15	20	46.3	May	22	16	26.2
May	30	19	17.4	June	7	13	54.2	June	14	3	53.3	June	21	6	15.7
June	29	9	47.0	July	6	20	23.8	July	13	11	44.1	July	20	22	0.0
July	28	22	49.6	August	5	1	16.2	August	11	21	14.4	August	19	15	21.1
August	27	10	20.9	September	3	6	5.0	September	10	9	3.6	September	18	9	42.5
September	25	20	38.2	October	2	12	23.2	October	9	23	33.7	October	18	4	0.7
October	25	6	19.8	October	31	21	28.7	November	8	16	41.9	November	16	20	53.8
November	23	16	11.5	November	30	10	6.3	December	8	11	46.2	December	16	11	13.7
December	23	2	47.0	December	30	2	18.5								

APOGEE, PERIGEE, AND GREATEST LIBRATION.

Apogee.		Perigee.		Greatest Libration.			
	d h		d h		d h m		d h m
January	11 3.2	January	24 21.9	January	5 2 43 W.	January	17 15 25 E.
February	8 0.4	February	19 20.4	February	1 10 20 W.	February	14 0 46 E.
March	7 19.4	March	19 19.2	February	27 16 9 W.	March	14 0 12 E.
April	4 9.3	April	17 3.6	March	26 12 11 W.	April	11 4 54 E.
May	1 14.3	May	15 14.1	April	23 9 35 W.	May	9 10 13 E.
May	28 17.7	June	12 22.4	May	21 14 19 W.	June	6 9 48 E.
June	25 5.4	July	11 0.1	June	19 7 8 W.	July	3 17 32 E.
July	22 21.6	August	7 3.7	July	16 19 41 W.	July	30 1 32 E.
August	19 16.1	September	1 5.1	August	13 10 52 W.	August	25 16 17 E.
September	16 11.0	September	28 7.3	September	9 8 6 W.	September	22 12 30 E.
October	14 4.9	October	26 10.3	October	5 14 7 W.	October	20 14 30 E.
November	10 16.3	November	23 21.3	November	1 21 28 W.	November	17 21 37 E.
December	7 17.5	December	22 10.2	November	29 23 17 W.	December	16 4 0 E.
				December	28 6 47 W.		

FORMULÆ FOR THE LIBRATION OF THE MOON.

Put I , the inclination of the moon's equator to the ecliptic ($=1^\circ 28'.8$),

Ω , the mean longitude of the moon's ascending node, (see page 278), or the mean longitude of the descending node of the moon's equator,

C , the angle at the centre of the moon's disk made by a lunar meridian with the circle of declination, counted from north to east on the apparent disk,

$\lambda, \beta, \alpha', \delta'$ the apparent longitude, latitude, right ascension, and declination of the moon, corrected for parallax,

λ' , the selenocentric longitude of the earth, counted on the moon's equator from its descending node, Ω ,

$i, \Delta, \Omega', \epsilon$, the quantities defined on page 276, where their values for the year are given.

The moon's libration in longitude and latitude may then be found, for any time, by means of the following formulæ, in connection with the tables given on pages 276 and 277:—

$$\left. \begin{aligned} \Delta \lambda &= -0'.57 \sin 2 (\Omega - \lambda) \\ a &= \sin I \cos (\Omega - \lambda) \\ \tan B &= \tan I \sin (\Omega - \lambda) \\ \lambda' &= \lambda + \Delta \lambda + a \beta \end{aligned} \right\} \text{See table, page 277.}$$

$$\text{The libration in latitude} = b = B - \beta$$

$$\text{The libration in longitude} = l = \lambda' - \epsilon$$

$$\sin C = \sin i \frac{\cos (\lambda' + \Delta - \Omega)}{\cos \delta'} = - \sin i \frac{\cos (\alpha' - \Omega')}{\cos \delta'}$$

MEAN PLACES FOR 1897.0. (January 0 ^d .0—0 ^d .624, Washington.)					
Name of Star.	Magni- tude.	Right Ascension.	Annual Proper Motion.	Declination.	Annual Proper Motion.
<i>d</i> Piscium . . .	5.3	h m s 0 15 17.828	−0.0001	+ 7 37 5.37	+0.011
45 Piscium . . .	6.9	0 20 23.262	+0.0015	7 7 18.25	−0.053
51 Piscium . . .	5.8	0 27 4.859	+0.0009	6 23 11.61	+0.003
75 Piscium . . .	6.0	1 1 8.496	+0.0014	12 24 14.04	+0.032
101 Piscium . . .	6.3	1 30 15.910	−0.0005	14 8 5.31	−0.015
103 Piscium . . .	6.8	1 33 42.081	−0.0014	+16 6 10.11	−0.026
105 Piscium . . .	6.3	1 34 7.305	+0.0040	15 52 59.73	−0.011
3 Arietis . . .	6.0	1 40 59.649	+0.0014	16 53 47.34	−0.014
4 Arietis . . .	5.7	1 42 35.635	+0.0024	16 26 34.23	−0.021
6 Arietis . . .	5.7	1 51 43.350	+0.0020	17 18 52.11	−0.032
15 Arietis . . .	5.7	2 4 54.992	+0.0056	+19 0 51.16	−0.038
B. A. C. 686 . . .	7.2	2 8 8.791	+0.0011	19 7 54.76	0.000
8 Arietis . . .	5.7	2 12 23.700	−0.0012	19 25 28.34	−0.008
23 Arietis . . .	7.5	2 13 25.058	−0.0018	19 12 58.72	−0.116
26 Arietis . . .	6.0	2 24 51.734	+0.0047	19 23 52.88	−0.032
<i>v</i> Arietis . . .	5.7	2 32 57.972	−0.0008	+21 30 58.23	−0.012
<i>μ</i> Arietis . . .	6.0	2 36 33.460	+0.0018	19 34 20.65	−0.055
64 Arietis . . .	5.7	3 18 13.419	+0.0003	24 21 32.55	−0.056
66 Arietis . . .	6.0	3 22 25.217	−0.0002	22 26 55.80	−0.124
7 Tauri . . .	6.0	3 28 20.535	+0.0006	24 7 7.08	−0.043
9 Tauri . . .	7.0	3 30 54.546	−0.0011	+22 52 11.76	−0.053
11 Tauri . . .	6.7	3 34 37.109	+0.0004	24 59 46.30	−0.021
<i>g</i> Pleiadum . . .	6.3	3 38 40.764	+0.0009	23 57 54.82	−0.059
17 Tauri . . .	4.3	3 38 45.460	+0.0009	23 47 21.29	−0.059
18 Tauri . . .	6.3	3 39 0.970	+0.0009	24 30 56.62	−0.059
19 Tauri . . .	5.0	3 39 4.523	+0.0009	+24 8 37.77	−0.059
20 Tauri . . .	5.0	3 39 41.765	+0.0009	24 2 44.32	−0.059
21 Tauri . . .	7.0	3 39 46.224	+0.0009	24 13 57.38	−0.059
22 Tauri . . .	7.0	3 39 54.761	+0.0009	24 12 21.60	−0.059
23 Tauri . . .	4.7	3 40 12.678	+0.0009	23 37 38.20	−0.059
26 Tauri . . .	7.0	3 42 49.669	+0.0009	+23 32 28.24	−0.059
27 Tauri . . .	4.0	3 43 2.162	+0.0009	23 44 17.83	−0.059
28 Tauri . . .	6.2	3 43 3.420	+0.0009	23 49 17.99	−0.059
B. A. C. 1192 . . .	6.0	3 44 7.127	−0.0021	25 16 4.00	−0.153
36 Tauri . . .	6.0	3 58 12.019	0.0000	23 49 19.61	−0.024
<i>ρ</i> Tauri . . .	6.0	4 4 33.433	−0.0027	+26 12 43.06	−0.048
<i>φ</i> Tauri . . .	5.3	4 14 1.158	−0.0012	27 6 15.01	−0.084
<i>χ</i> Tauri . . .	5.7	4 16 18.874	+0.0032	25 23 9.88	−0.037
118 Tauri . . .	5.7	5 22 56.165	+0.0011	25 4 0.81	−0.030
125 Tauri . . .	6.0	5 33 21.135	+0.0004	25 50 20.97	−0.031
136 Tauri . . .	5.3	5 46 51.242	+0.0007	+27 35 16.00	−0.011
139 Tauri . . .	5.3	5 51 36.190	−0.0004	25 56 27.40	−0.002
37 Geminorum . . .	6.3	6 48 58.728	−0.0030	25 30 14.50	−0.001
39 Geminorum . . .	6.3	6 52 26.583	−0.0126	26 12 57.68	+0.071
40 Geminorum . . .	6.3	6 53 6.423	−0.0013	26 3 13.07	−0.028
<i>ω</i> Geminorum . . .	5.7	6 56 8.282	−0.0011	+24 21 42.96	−0.021

MEAN PLACES FOR 1897.0. (January 0^d.0—0^d.624, Washington.)

Name of Star.	Magni- tude.	Right Ascension.	Annual Proper Motion.	Declination.	Annual Proper Motion.
		h m s	s	° ' "	"
48 Geminorum . . .	6.0	7 6 10.975	-0.0013	+24 18 2.50	-0.049
49 Geminorum . . .	7.2	7 6 29.338	-0.0012	25 55 11.10	-0.046
B. A. C. 2363, . . .	7.3	7 8 9.358	-0.0051	24 53 10.4	. . . .
52 Geminorum . . .	6.3	7 8 24.111	+0.0040	25 3 48.61	-0.108
A Geminorum . . .	5.7	7 17 11.827	-0.0056	25 14 53.43	-0.036
58 Geminorum . . .	6.3	7 17 16.834	-0.0030	+23 8 36.53	-0.045
κ Geminorum . . .	3.7	7 38 13.813	-0.0024	24 38 40.86	-0.063
82 Geminorum . . .	6.3	7 42 24.028	-0.0025	23 23 44.41	+0.002
84 Geminorum . . .	6.8	7 46 54.015	-0.0004	22 35 56.50	-0.009
7 Cancri . . .	6.3	7 57 45.696	-0.0042	22 21 34.08	-0.007
μ ₁ Cancri . . .	6.3	8 0 12.178	-0.0021	+22 55 45.30	-0.026
μ ₂ Cancri . . .	5.7	8 1 42.254	+0.0015	21 52 50.38	-0.078
B. A. C. 2788 . . .	6.0	8 14 20.511	+0.0036	21 4 21.01	-0.052
α ¹ Cancri . . .	6.0	8 17 27.993	-0.0048	18 39 46.20	-0.025
θ Cancri . . .	5.7	8 25 43.405	-0.0050	18 26 32.32	-0.068
35 Cancri . . .	6.3	8 29 24.165	-0.0044	+19 56 38.98	-0.014
B. A. C. 2899 . . .	7.2	8 31 52.425	-0.0062	19 37 35.87	+0.036
38 Cancri . . .	7.0	8 33 47.689	-0.0030	20 8 29.70	+0.013
B. A. C. 2914 . . .	7.2	8 33 56.250	-0.0004	19 54 11.77	-0.037
39 Cancri . . .	7.0	8 34 10.925	-0.0051	20 22 16.73	-0.010
40 Cancri . . .	7.3	8 34 16.981	-0.0039	+20 20 6.03	+0.001
B. A. C. 2919 . . .	7.3	8 34 27.380	-0.0026	20 1 59.52	-0.037
ε Cancri . . .	7.2	8 34 32.483	-0.0055	19 54 32.12	-0.013
ε Cancri . . .	7.1	8 34 48.591	+0.0010	20 5 2.55	-0.009
B. A. C. 2931 . . .	7.5	8 35 55.149	-0.0043	20 14 27.92	-0.009
δ Cancri . . .	4.0	8 38 49.938	-0.0014	+18 31 57.98	-0.233
54 Cancri . . .	6.3	8 45 17.272	-0.0090	15 43 56.22	+0.061
φ ¹ Cancri . . .	5.7	8 51 30.331	+0.0042	15 43 3.77	+0.018
φ ² Cancri . . .	6.0	8 51 50.089	+0.0032	15 58 35.96	+0.022
68 Cancri . . .	7.5	8 55 56.842	-0.0021	17 29 6.24	+0.008
B. A. C. 3103 . . .	7.5	9 0 29.203	+0.0002	+17 31 36.5	. . . .
π ¹ Cancri . . .	6.3	9 6 39.374	-0.0375	15 24 38.94	+0.216
π ² Cancri . . .	6.0	9 9 32.753	-0.0024	15 22 7.80	+0.002
7 Leonis . . .	6.3	9 30 15.218	-0.0029	14 50 20.55	-0.012
11 Leonis . . .	6.8	9 32 24.112	-0.0056	14 48 45.58	-0.074
φ Leonis . . .	6.0	9 38 7.381	-0.0006	+14 29 33.35	-0.017
18 Leonis . . .	6.0	9 40 50.478	-0.0010	12 17 3.28	+0.003
19 Leonis . . .	7.0	9 41 53.660	-0.0057	12 2 41.33	+0.015
21 Leonis . . .	6.8	9 45 16.818	-0.0018	12 19 23.86	+0.002
23 Leonis . . .	6.3	9 45 27.684	+0.0027	13 32 51.03	-0.028
ν Leonis . . .	5.3	9 52 40.971	-0.0025	+12 56 9.44	-0.029
A Leonis . . .	4.7	10 2 26.321	-0.0064	10 30 8.80	-0.059
43 Leonis . . .	6.5	10 17 37.112	-0.0021	7 3 55.14	-0.111
44 Leonis . . .	6.0	10 19 49.574	+0.0008	9 18 29.85	-0.044
48 Leonis . . .	5.5	10 29 25.622	-0.0077	7 29 1.83	+0.046
34 Sextantis . . .	6.7	10 37 18.355	-0.0069	+ 4 7 15.86	+0.016

MEAN PLACES FOR 1897.0. (January 0 ^d .0—0 ^d .624, Washington.)					
Name of Star.	Magni- tude.	Right Ascension.	Annual Proper Motion.	Declination.	Annual Proper Motion.
		h m s	s	° ' "	"
35 Sextantis	6.2	10 37 59.382	-0.0045	+ 5 17 11.88	-0.067
37 Sextantis	6.3	10 40 43.996	+0.0003	6 54 57.22	-0.038
<i>d</i> Leonis	5.3	10 55 14.451	-0.0006	4 10 13.10	-0.028
<i>p</i> ⁸ Leonis	5.7	11 8 29.264	-0.0026	0 29 26.61	-0.012
75 Leonis	5.7	11 11 59.400	+0.0021	2 34 35.54	-0.164
76 Leonis	6.3	11 13 37.713	-0.0045	+ 2 12 53.83	-0.066
79 Leonis	6.0	11 18 45.176	-0.0025	+ 1 58 21.99	-0.012
<i>e</i> Leonis	5.3	11 25 3.112	+0.0009	- 2 26 6.80	-0.013
B. A. C. 4006	6.1	11 45 46.438	+0.0029	4 45 38.94	-0.023
<i>q</i> Virginis	5.7	12 28 27.696	-0.0070	8 53 2.87	-0.014
<i>χ</i> Virginis	5.2	12 33 55.742	-0.0058	- 7 25 44.30	-0.043
<i>ψ</i> Virginis	5.2	12 48 59.714	-0.0026	8 58 47.02	-0.034
69 Virginis	5.0	13 21 57.403	-0.0096	15 26 23.69	-0.003
75 Virginis	6.0	13 27 21.488	-0.0029	14 49 59.70	-0.012
83 Virginis	6.0	13 38 56.364	+0.0006	15 39 41.00	-0.031
85 Virginis	6.5	13 40 2.172	-0.0051	-15 14 59.96	-0.043
87 Virginis	5.8	13 41 49.117	+0.0021	17 20 38.97	-0.048
89 Virginis	5.4	13 44 16.438	-0.0079	17 37 16.51	-0.051
B. A. C. 4722	5.8	14 9 43.493	-0.0027	17 43 12.78	-0.015
B. A. C. 4923	7.3	14 51 26.6	+0.0691	20 56 56.31	-1.646
42 Libræ	5.7	15 34 11.472	-0.0023	-23 28 59.59	-0.033
<i>b</i> Scorpïi	5.3	15 44 46.828	-0.0053	25 26 18.18	-0.061
A ³ Scorpïi	5.2	15 47 25.541	-0.0037	25 1 10.79	-0.039
B. A. C. 5253	5.8	15 47 44.664	-0.0023	24 13 33.55	-0.030
B. A. C. 5254	5.8	15 47 47.946	-0.0031	23 40 15.37	-0.017
3 Scorpïi	6.7	15 48 28.443	-0.0023	-24 56 17.07	-0.028
4 Scorpïi	6.3	15 49 16.563	-0.0035	25 57 44.69	-0.037
<i>π</i> Scorpïi	3.4	15 52 37.171	-0.0019	25 49 2.72	-0.045
B. A. C. 5314	5.7	15 57 7.130	-0.0032	25 34 39.61	-0.028
B. A. C. 5347	6.0	16 1 50.917	+0.0079	26 2 58.21	+0.114
<i>σ</i> Scorpïi	3.4	16 14 55.560	-0.0022	-25 20 43.69	-0.026
22 Scorpïi	5.5	16 23 56.929	-0.0011	24 53 18.71	-0.035
25 Scorpïi	7.0	16 40 32.978	-0.0004	25 20 26.24	-0.004
31 Ophiuchi	6.7	16 58 23.339	+0.0001	25 29 53.13	-0.084
B. A. C. 5800	7.5	17 7 49.325	-0.0020	26 51 40.46	-0.104
A Ophiuchi	4.9	17 9 0.867	-0.0364	-26 27 4.36	-1.156
B. A. C. 5813	6.8	17 9 53.369	-0.0360	26 23 54.06	-1.158
38 Ophiuchi	6.7	17 11 15.128	-0.0062	26 30 56.62	-0.074
43 Ophiuchi	5.8	17 16 52.580	-0.0013	28 2 34.75	-0.065
3 Sagittarii	4-6	17 41 4.556	-0.0022	27 47 29.51	-0.030
63 Ophiuchi	6.6	17 48 33.742	-0.0004	-24 51 58.27	+0.002
B. A. C. 6194	5.1	18 11 36.115	-0.0086	27 4 45.12	+0.030
B. A. C. 6304	7.0	18 26 56.555	-0.0014	24 11 4.41	-0.021
24 Sagittarii	5.9	18 27 35.952	-0.0012	24 6 31.08	-0.009
25 Sagittarii	6.3	18 28 14.987	+0.0049	24 18 1.22	+0.009
26 Sagittarii	6.6	18 35 34.670	+0.0012	-23 55 45.06	-0.030

STARS OCCULTED BY THE MOON.

421

MEAN PLACES FOR 1897.0. (January 0^d.0—0^d.624, Washington.)

Name of Star.	Magni- tude.	Right Ascension.	Annual Proper Motion.	Declination.	Annual Proper Motion.
		^h ^m ^s	^s	[°] ['] ["]	["]
B. A. C. 6369 . . .	6.2	18 38 29.655	-0.0011	-25 6 49.31	-0.030
φ Sagittarii . . .	3.7	18 39 13.209	+0.0014	27 5 48.10	-0.026
φ Sagittarii . . .	5.4	19 9 13.493	+0.0014	25 26 2.75	-0.041
B. A. C. 6607 . . .	5.9	19 14 27.882	-0.0009	22 35 39.79	-0.020
χ ¹ Sagittarii . . .	5.4	19 19 0.474	+0.0030	24 42 30.16	-0.068
χ ³ Sagittarii . . .	6.3	19 19 7.020	+0.0011	-24 36 52.10	-0.057
χ ³ Sagittarii . . .	5.6	19 19 15.634	-0.0025	24 9 50.41	-0.017
κ ¹ Sagittarii . . .	5.1-6.2	19 29 46.485	+0.0001	24 56 40.30	-0.023
κ ³ Sagittarii . . .	4.7	19 30 26.364	+0.0037	25 6 38.71	-0.027
53 Sagittarii . . .	6.7	19 33 38.000	-0.0024	23 39 43.68	-0.052
B. A. C. 6727 . . .	6.2	19 33 55.650	+0.0011	-23 39 52.55	-0.015
4 Capricorni . . .	6.1	20 11 58.321	+0.0007	22 7 40.78	-0.038
σ Capricorni . . .	5.6	20 13 27.067	-0.0004	19 26 23.66	-0.008
ρ Capricorni . . .	5.3	20 22 59.186	-0.0013	18 9 14.66	-0.020
B. A. C. 7044 . . .	7.0	20 23 7.701	+0.0007	18 12 48.80	-0.148
o Capricorni . . .	6.2	20 23 59.631	+0.0001	-18 55 26.41	-0.083
υ Capricorni . . .	5.7	20 34 11.226	-0.0021	18 30 3.61	-0.002
19 Capricorni . . .	6.1	20 48 58.649	-0.0051	18 18 48.08	-0.017
B. A. C. 7263 . . .	5.9	20 51 54.651	+0.0046	16 25 41.52	-0.029
21 Capricorni . . .	6.4	20 55 3.989	-0.0030	17 55 56.07	+0.001
θ Capricorni . . .	4.1	21 0 9.514	+0.0047	-17 38 32.03	-0.075
29 Capricorni . . .	5.7	21 10 2.860	+0.0016	15 35 58.01	-0.003
18 Aquarii . . .	5.7	21 18 33.900	+0.0061	13 19 12.83	-0.008
42 Capricorni . . .	5.6	21 35 56.910	-0.0090	14 30 24.20	-0.304
λ Capricorni . . .	5.7	21 40 59.472	+0.0009	11 50 28.09	-0.022
50 Capricorni . . .	6.9	21 41 8.981	+0.0009	-12 10 11.50	-0.141
36 Aquarii . . .	6.3	22 4 0.066	+0.0021	8 41 31.40	+0.045
ε ¹ Aquarii . . .	6.8	22 5 2.244	+0.0028	11 19 37.15	+0.040
B. A. C. 7774 . . .	6.4	22 11 26.245	-0.0021	9 33 12.64	-0.021
ρ Aquarii . . .	5.6	22 14 46.804	+0.0006	8 20 17.69	-0.008
B. A. C. 7804 . . .	6.2	22 18 8.2	. . .	- 7 42 52.3	. . .
κ Aquarii . . .	5.2	22 32 25.390	-0.0050	4 45 33.50	-0.122
67 Aquarii . . .	6.4	22 37 51.453	-0.0017	7 30 6.00	+0.005
B. A. C. 7951 (<i>mean</i>) . . .	6.7	22 42 31.405	-0.0150	4 45 47.33	-0.286
B. A. C. 7986 . . .	5.9	22 49 50.497	+0.0024	5 32 10.88	+0.003
B. A. C. 7993 . . .	6.6	22 51 57.253	-0.0032	- 5 21 38.25	-0.001
B. A. C. 8017 . . .	6.1	22 56 11.8	. . .	- 5 15 58.0	. . .
κ Piscium . . .	4.7	23 21 39.119	+0.0046	+ 0 41 29.39	-0.111
9 Piscium . . .	6.6	23 21 58.262	+0.0032	+ 0 33 23.00	-0.051
12 Piscium . . .	6.8	23 24 13.474	-0.0010	- 1 36 8.11	-0.010
15 Piscium . . .	6.6	23 30 12.461	-0.0077	+ 0 44 38.34	-0.041
16 Piscium . . .	5.8	23 31 7.917	-0.0080	1 31 50.18	+0.056
λ Piscium . . .	4.5	23 36 47.444	-0.0098	1 12 46.79	-0.173
19 Piscium . . .	4.9	23 41 7.680	-0.0039	2 54 55.06	-0.032
22 Piscium . . .	5.0	23 46 41.394	-0.0008	2 21 27.89	-0.020
25 Piscium . . .	6.4	23 47 48.227	+0.0001	+ 1 31 3.56	-0.016

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.											
JANUARY.											
THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1897.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	z'	y'	N.	S.
		Δα	Δδ								
<div>NEW MOON.</div> <div>d h m</div> <div>h m</div>											
MERCURY											
19 Capricorni	6.1	-0.28	- 6.2	18 30.5	4 0 34.4	- 0 52.3	+0.1373	0.5075	+0.1692	+30	-35
21 Capricorni	6.4	0.26	6.0	18 18.9	11 12.8	+ 9 23.9	-0.0418	0.5456	0.2063	+32	-46
0 Capricorni	4.1	0.24	5.8	17 56.0	13 59.4	-11 55.2	+0.1387	0.5430	0.2104	+43	-36
				17 38.6	16 19.9	- 9 39.3	+0.3334	0.5415	0.2143	+53	-25
29 Capricorni	5.7	-0.21	- 5.4	-15 36.1	20 55.9	- 5 12.4	-0.8104	0.5366	+0.2199	- 6	-90
42 Capricorni	5.6	0.13	4.8	14 30.5	5 9 19.5	+ 6 47.3	+0.8539	0.5256	0.2337	+75	+ 3
50 Capricorni	6.9	0.12	4.2	12 10.3	11 52.3	+ 9 15.3	-1.0178	0.5235	0.2361	-16	-90
♈ Aquarii	6.8	0.03	3.5	11 19.3	23 49.7	- 3 9.2	+0.9718	0.5144	0.2453	+79	+10
B. A. C. 7774	6.4	0.02	2.9	9 33.3	6 3 5.8	+ 0 1.0	-0.1155	0.5122	0.2473	+35	-49
♏ Aquarii	5.6	-0.01	- 2.5	- 8 20.3	4 49.1	+ 1 41.2	-0.9861	0.5110	+0.2483	-12	-90
B. A. C. 7804	6.2	0.00	2.3	7 41.9	6 33.1	+ 3 22.2	-1.2400	0.5091	0.2493	-31	-90
67 Aquarii	6.4	+0.08	1.6	7 30.1	16 53.0	-10 36.0	+1.1477	0.5038	0.2534	+82	+21
B. A. C. 7951	6.7	0.08	0.8	4 45.8	19 21.8	- 8 11.4	-1.1669	0.5025	0.2542	-23	-90
B. A. C. 7986	5.9	0.12	0.8	5 32.2	23 16.4	- 4 23.5	+0.6609	0.5006	0.2551	+84	- 9
B. A. C. 7993	6.6	+0.13	- 0.7	- 5 21.6	7 0 24.3	- 3 17.5	+0.7606	0.5001	+0.2553	+80	- 4
B. A. C. 8017	6.1	0.15	- 0.6	5 16.0	2 41.4	- 1 4.3	+1.2439	0.4990	0.2557	+85	+29
12 Piscium	6.8	0.26	+ 1.2	- 1 36.1	17 58.7	-10 12.4	+1.1993	0.4937	0.2561	+88	+25
15 Piscium	6.6	0.26	2.4	+ 0 44.7	21 16.6	- 7 0.0	-0.5088	0.4929	0.2558	+17	-73
16 Piscium	5.8	0.26	2.6	1 31.9	21 47.2	- 6 30.2	-1.2350	0.4928	0.2556	-28	-88
♊ Piscium	4.5	+0.29	+ 2.5	+ 1 12.8	8 0 55.0	- 3 27.6	-0.0905	0.4921	+0.2551	+38	-48
19 Piscium	4.9	0.30	3.3	2 55.0	3 19.2	- 1 7.4	+1.3355	0.4917	0.2547	-39	-87
22 Piscium	5.0	0.34	3.3	2 21.5	6 24.4	+ 1 52.8	+0.0572	0.4913	0.2538	+46	-40
25 Piscium	6.4	0.35	3.0	1 31.1	7 1.5	+ 2 28.9	+1.1322	0.4913	0.2537	+90	+20
45 Piscium	6.9	0.49	5.7	7 7.4	9 1 9.8	- 3 52.4	-0.4676	0.4907	0.2464	+19	-50
51 Piscium	5.8	+0.53	+ 5.6	+ 6 23.3	4 53.0	- 0 15.3	+1.2540	0.4910	+0.2449	+90	+33
75 Piscium	6.0	0.69	8.5	12 24.4	23 40.4	- 5 58.8	-0.9070	0.4948	0.2311	- 6	-78
7 Piscium	3.7	0.83	9.7	14 49.1	10 13 7.7	+ 7 5.8	-0.5456	0.4995	0.2188	+15	-68
101 Piscium	6.3	0.86	9.6	14 8.2	15 25.8	+ 9 19.7	+0.7105	0.5004	0.2160	+90	0
103 Piscium	6.8	0.87	10.3	16 6.3	17 15.8	+11 6.8	-1.0758	0.5012	0.2143	-18	-74
105 Piscium	6.3	+0.88	+10.2	+15 53.2	17 29.2	+11 19.9	-0.7850	0.5014	+0.2140	+ 1	-67
3 Arietis	6.0	0.92	10.7	16 54.0	21 8.1	- 9 7.5	-1.1330	0.5029	0.2100	-23	-73
4 Arietis	5.7	0.93	10.6	16 26.6	21 58.9	- 8 18.2	-0.4534	0.5034	0.2090	+19	-61
♈ Arietis	5.7	0.98	10.9	17 19.0	11 2 47.0	- 3 38.3	-0.4283	0.5058	0.2033	+20	-59
15 Arietis	5.7	1.06	11.6	19 1.0	9 38.5	+ 3 1.1	-0.9447	0.5094	0.1946	- 9	-71
B. A. C. 686	7.2	+1.08	+11.6	+19 8.1	11 18.6	+ 4 38.3	-0.7521	0.5103	+0.1924	+ 2	-69
0 Arietis	5.7	1.11	11.7	19 25.7	13 29.2	+ 6 44.9	-0.6604	0.5116	0.1894	+ 8	-70
23 Arietis	7.5	1.12	11.7	19 13.2	14 0.6	+ 7 15.4	-0.3311	0.5119	0.1887	+25	-52
26 Arietis	6.0	1.19	11.7	19 24.1	19 49.4	-11 6.4	+0.5403	0.5153	0.1803	+78	- 5
♊ Arietis	5.7	1.25	12.5	21 31.2	23 53.3	- 7 9.9	-1.0819	0.5178	0.1740	-21	-68
♈ Arietis	4.6	+1.38	+12.2	+20 55.9	12 9 56.9	+ 2 35.0	+1.2369	0.5242	+0.1576	+90	+44
64 Arietis	5.7	1.56	12.8	24 21.8	21 55.5	- 9 49.3	-0.7885	0.5322	0.1357	- 1	-66
7 Tauri	6.0	1.62	12.6	24 7.3	18 2 41.5	- 5 12.7	+0.1013	0.5353	0.1263	+49	-21
11 Tauri	6.7	1.68	12.7	25 0.0	5 37.6	- 2 22.4	-0.5015	0.5372	0.1204	+11	-53
♈ Pleiadum	6.3	1.70	12.3	23 58.1	7 30.7	- 0 33.1	+0.8549	0.5385	0.1165	+90	+21
17 Tauri	4.3	+1.70	+12.2	+23 47.6	7 32.8	- 0 31.1	+1.0521	0.5385	+0.1164	+90	+33
18 Tauri	6.3	1.71	12.4	24 31.2	7 40.0	- 0 24.0	+0.2680	0.5386	0.1162	+60	-12
19 Tauri	5.0	1.70	12.3	24 8.8	7 41.7	- 0 22.4	+0.6798	0.5386	0.1161	+90	+10
20 Tauri	5.0	1.71	12.3	24 2.9	7 58.9	- 0 5.8	+0.8209	0.5388	0.1155	+90	+18
21 Tauri	7.0	1.71	12.3	24 14.2	8 1.0	- 0 3.8	+0.6195	0.5388	0.1155	+88	+ 7
22 Tauri	7.0	+1.71	+12.3	+24 12.6	8 4.9	0 0.0	+0.6560	0.5388	+0.1153	+90	+ 9
7 Tauri	3.1	1.72	12.2	23 47.4	8 45.1	+ 0 38.8	+1.1938	0.5393	0.1139	+90	+46
28 Tauri	6.2	1.72	12.1	23 49.5	9 32.1	+ 1 34.3	+1.2434	0.5398	0.1122	+90	+52
B. A. C. 1192	6.0	1.74	12.3	25 16.3	10 1.4	+ 1 52.6	-0.2903	0.5401	0.1112	+27	-40
♊ Tauri	6.0	1.88	12.2	26 12.9	19 20.6	+10 52.9	-0.3797	0.5460	0.0907	+22	-43
♈ Tauri	5.3	+1.95	+12.1	+27 6.5	23 35.7	- 9 0.7	-0.9934	0.5484	+0.0810	-17	-63

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JANUARY.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1897.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
χ Tauri	5.7	+1.94	+11.6	+25 23.4	14 0 37.2	- 8 1.3	+0.9671	0.5491	+0.0785	+90	+31
β Tauri	1.8	2.33	9.5	28 31.4	15 4 16.8	- 5 20.7	-1.2089	0.5618	+0.0092	-41	-61
136 Tauri	5.3	2.44	7.7	27 35.4	15 47.6	+ 5 44.9	-0.2692	0.5647	-0.0215	+28	-31
ϵ Geminorum	3.2	2.57	4.1	25 14.0	16 13 12.8	+ 2 23.0	+1.1726	0.5659	0.0789	+90	+48
37 Geminorum	6.3	2.60	3.4	25 30.3	18 1.5	+ 7 1.1	+0.4724	0.5654	0.0915	+75	+ 2
39 Geminorum	6.3	+2.63	+ 3.3	+26 13.0	19 29.5	+ 8 25.9	-0.4229	0.5652	-0.0953	+20	-46
40 Geminorum	6.3	2.63	3.2	26 3.3	19 46.3	+ 8 42.0	-0.2760	0.5651	0.0960	+28	-37
48 Geminorum	6.0	2.62	2.2	24 18.1	17 1 19.2	- 9 57.3	+1.0126	0.5641	0.1102	+90	+32
49 Geminorum	7.2	2.64	2.2	25 55.2	1 27.0	- 9 49.8	-0.7187	0.5641	0.1105	+ 2	-64
B. A. C. 2363	7.3	2.63	2.1	24 53.2	2 9.5	- 9 8.8	+0.2993	0.5639	0.1123	+62	- 9
52 Geminorum	6.3	+2.64	+ 2.0	+25 3.8	2 15.8	- 9 2.7	+0.0986	0.5639	-0.1125	+49	-19
A Geminorum	5.7	2.65	+ 1.5	25 14.9	6 0.6	- 5 26.1	-0.5358	0.5630	0.1219	+13	-55
κ Geminorum	3.7	2.66	- 0.1	24 38.7	15 1.7	+ 3 15.5	-1.0929	0.5611	0.1436	-23	-65
82 Geminorum	6.3	2.64	0.4	23 23.7	16 49.6	+ 4 59.5	-0.0384	0.5598	0.1478	+41	-30
84 Geminorum	6.8	2.63	0.8	22 35.9	18 46.3	+ 6 52.0	+0.5083	0.5588	0.1523	+77	- 3
7 Cancri	6.3	+2.63	- 1.5	+22 21.5	23 29.2	+11 24.8	+0.0167	0.5574	-0.1628	+44	-29
μ Cancri	6.5	2.64	1.7	22 55.7	18 0 33.0	-11 33.6	-0.7556	0.5571	0.1651	- 1	-67
μ^2 Cancri	5.7	2.62	1.8	21 52.8	1 12.3	-10 55.7	+0.2363	0.5568	0.1666	+57	-18
B. A. C. 2788	6.0	2.59	2.6	21 4.3	6 44.6	- 5 35.1	+0.1278	0.5546	0.1783	+51	-24
η Cancri	5.4	2.59	3.5	20 47.4	12 13.7	- 0 17.6	-0.5855	0.5523	0.1893	+12	-64
35 Cancri	6.3	+2.58	- 3.6	+19 56.6	13 24.3	+ 0 50.6	+0.0746	0.5517	-0.1916	+47	-29
B. A. C. 2899	7.2	2.56	4.0	19 37.5	14 30.2	+ 1 54.2	+0.1945	0.5513	0.1937	+55	-23
38 Cancri	7.0	2.56	4.2	20 8.4	15 21.6	+ 2 43.8	-0.5092	0.5509	0.1953	+16	-61
B. A. C. 2914	7.2	2.56	4.2	19 54.1	15 25.4	+ 2 47.5	-0.2729	0.5509	0.1955	+28	-48
39 Cancri	7.0	2.57	4.2	20 22.2	15 31.9	+ 2 53.8	-0.7823	0.5508	0.1957	0	-70
40 Cancri	7.3	+2.57	- 4.2	+20 20.0	15 34.2	+ 2 56.0	-0.7519	0.5508	-0.1957	+ 2	-70
B. A. C. 2919	7.3	2.56	4.2	20 1.9	15 39.3	+ 3 0.9	-0.4538	0.5508	0.1959	+19	-58
ϵ Cancri	7.2	2.56	4.2	19 54.5	15 41.5	+ 3 3.1	-0.3313	0.5507	0.1960	+25	-51
ϵ Cancri	7.1	2.56	4.2	20 5.0	15 48.7	+ 3 10.0	-0.5375	0.5506	0.1962	+14	-62
B. A. C. 2931	7.5	2.56	4.3	20 14.4	16 18.4	+ 3 38.7	-0.7984	0.5506	0.1971	- 1	-70
δ Cancri	4.0	+2.53	- 4.4	+18 31.9	17 36.5	+ 4 54.1	+0.7244	0.5500	-0.1996	+90	+ 4
68 Cancri	7.5	2.49	5.4	17 29.0	19 1 18.7	-11 39.6	+0.2233	0.5466	0.2131	+55	-22
B. A. C. 3103	7.5	2.49	5.7	17 31.5	3 22.2	- 9 40.3	-0.2622	0.5457	0.2165	+29	-49
π Cancri	6.3	2.44	5.9	15 24.5	6 10.7	- 6 57.6	+1.3190	0.5445	0.2210	+90	+47
π^2 Cancri	6.0	2.44	6.1	15 22.0	7 29.9	- 5 41.0	+1.0689	0.5439	0.2231	+90	+23
7 Leonis	6.3	+2.39	- 7.3	+14 50.2	17 2.0	+ 3 31.9	-0.5771	0.5400	-0.2367	+13	-70
11 Leonis	6.8	2.39	7.4	14 48.6	18 1.8	+ 4 29.8	-0.7862	0.5396	0.2380	+ 1	-68
ψ Leonis	6.0	2.37	7.7	14 29.4	20 41.4	+ 7 4.1	-1.0925	0.5385	0.2414	-19	-76
18 Leonis	6.0	2.34	7.5	12 16.9	21 57.4	+ 8 17.6	+0.8796	0.5381	0.2429	+90	+19
19 Leonis	6.0	2.32	7.6	12 2.6	22 27.0	+ 8 46.2	+1.0064	0.5379	0.2435	+90	+15
21 Leonis	6.8	+2.32	- 7.8	+12 19.3	20 0 2.0	+10 18.0	+0.3318	0.5376	-0.2454	+62	-22
23 Leonis	6.3	2.34	8.0	13 32.7	0 7.1	+10 22.9	-0.9512	0.5373	0.2455	- 9	-76
ν Leonis	5.3	2.31	8.3	12 56.0	3 30.3	-10.20.5	-1.1578	0.5361	0.2493	-23	-77
A Leonis	4.7	2.25	8.4	10 30.0	8 6.2	- 5 53.6	+0.1899	0.5346	0.2540	+54	-31
44 Leonis	6.0	2.18	9.0	9 18.3	16 21.4	+ 2 5.6	-0.7104	0.5322	0.2613	+ 6	-81
48 Leonis	5.5	+2.12	- 9.2	+ 7 28.9	20 56.3	+ 6 31.6	-0.0440	0.5311	-0.2646	+41	-44
35 ¹ Sextantis	6.2	2.05	9.2	5 17.0	21 1 2.5	+11 14.9	+0.5303	0.5303	0.2672	+90	+19
37 Sextantis	6.3	2.06	9.7	6 54.8	2 21.5	+11 46.5	-0.9052	0.5300	0.2680	- 5	-83
δ Leonis	5.3	1.98	9.7	4 10.1	9 20.0	- 5 28.4	+0.0223	0.5291	0.2712	+44	-41
ρ Leonis	6.2	1.94	9.6	2 30.7	12 25.1	- 2 29.2	+0.8748	0.5288	0.2723	+90	+ 3
75 Leonis	5.7	+1.90	-10.0	+ 2 34.4	17 24.3	+ 2 20.5	-0.5498	0.5286	-0.2736	+15	-77
76 Leonis	6.3	1.89	10.0	2 12.7	18 11.7	+ 3 6.4	-0.3971	0.5286	0.2738	+23	-66
79 Leonis	6.0	1.87	10.1	+ 1 58.2	20 40.0	+ 5 29.9	-0.8269	0.5284	0.2741	0	-88
ν Leonis	4.4	1.80	9.8	- 0 15.5	22 53.6	+11 31.6	-0.2646	0.5287	0.2745	+30	-58
ϵ Virginis	5.7	1.49	9.0	8 53.2	28 59.1	-10 15.2	+1.1542	0.5344	0.2654	+81	+22
χ Virginis	5.2	+1.48	- 9.5	- 7 25.9	8 33.2	- 7 46.1	-1.0018	0.5353	-0.2636	-12	-90

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JANUARY.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1897.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
ψ Virginis	5.2	+1.40	-9.3	- 8 59.1	28 15 34.6	- 0 58.6	-1.2600	0.5382	-0.2579	-34	-90
75 Virginis	6.0	1.20	8.1	14 49.1	24 9 4.6	- 8 4.2	+0.3198	0.5472	0.2384	+55	-26
83 Virginis	6.0	1.14	7.8	15 39.8	14 14.2	- 3 5.3	-0.0531	0.5502	0.2312	+34	-46
85 Virginis	6.5	1.14	8.0	15 15.1	14 43.4	- 2 37.1	-0.5820	0.5506	0.2308	+ 7	-81
B. A. C. 4722	5.8	1.00	7.4	17 43.3	28 3 40.0	+ 9 53.0	-0.9295	0.5590	0.2092	-16	-90
42 Libræ	5.7	+0.61	-6.2	-23 29.1	26 14 28.1	- 4 38.7	-1.0878	0.5820	-0.1307	-36	-90
δ Scorpii	5.3	0.57	5.6	25 26.4	18 39.2	- 0 37.5	+0.3745	0.5843	0.1210	+45	-22
A ⁸ Scorpii	5.2	0.56	5.7	25 1.3	19 41.6	+ 0 22.4	-0.1736	0.5847	0.1164	+15	-54
B. A. C. 5253	5.8	0.56	6.0	24 13.7	19 49.1	+ 0 29.7	-0.9940	0.5848	0.1161	-30	-90
3 Scorpii	6.7	0.55	5.8	24 56.4	20 6.3	+ 0 46.2	-0.3041	0.5849	0.1153	+ 9	-62
4 Scorpii	6.3	+0.54	-5.4	-25 57.8	20 25.1	+ 1 4.2	+0.7001	0.5851	-0.1144	+63	- 3
π Scorpii	3.4	0.53	5.5	25 49.1	21 43.8	+ 2 19.8	+0.4052	0.5857	0.1107	+46	-21
B. A. C. 5314	5.7	0.52	5.6	25 34.8	23 29.3	+ 4 1.1	-0.0286	0.5866	0.1058	+22	-45
B. A. C. 5347	6.0	0.50	5.5	26 3.1	27 1 20.0	+ 5 47.3	+0.2604	0.5875	0.1005	+37	-28
σ Scorpii	3.4	0.45	5.8	25 20.8	6 24.3	+10 39.4	-0.9278	0.5896	0.0858	-29	-90
α Scorpii	1.2	+0.42	-5.5	-26 12.3	9 33.3	-10 19.3	-0.3108	0.5908	-0.0764	+ 5	-62
B. A. C. 5800	7.5	0.26	5.6	26 51.8	28 2 39.9	+ 6 5.4	-0.5025	0.5944	0.0238	-10	-78
A Ophiuchi	4.9	0.26	5.7	26 27.2	3 7.2	+ 6 31.6	-0.9313	0.5944	0.0223	-34	-90
B. A. C. 5813	6.8	0.26	5.7	26 24.0	3 27.2	+ 6 50.8	-0.9925	0.5945	0.0213	-39	-90
38 Ophiuchi	6.7	0.25	5.6	26 31.0	3 58.3	+ 7 20.6	-0.8835	0.5945	0.0197	-23	-90
43 Ophiuchi	5.8	+0.23	-5.2	-28 2.7	6 6.8	+ 9 23.8	+0.6397	0.5945	-0.0129	+54	- 6
3 Sagittarii	4.6	0.17	5.5	27 47.6	15 20.6	- 5 45.1	+0.3909	0.5937	+0.0160	+37	-21
B. A. C. 6194	5.1	0.09	5.6	27 4.8	29 3 4.0	+ 5 29.7	+0.0691	0.5907	0.0520	+22	-39
B. A. C. 6369	6.2	0.03	6.0	25 6.9	13 32.6	- 8 26.9	-1.2417	0.5860	0.0829	-57	-90
ϕ Sagittarii	3.7	0.03	5.6	27 5.9	13 49.7	- 8 10.4	+0.8204	0.5858	0.0837	+63	+ 5
σ Sagittarii	2.3	+0.02	-5.7	-26 25.6	17 38.5	- 4 30.6	+0.4700	0.5837	+0.0945	+49	-17
ψ Sagittarii	5.4	-0.02	5.8	25 26.1	30 1 46.6	+ 3 18.5	+0.3101	0.5786	0.1166	+39	-25
χ^1 Sagittarii	5.4	0.02	5.8	24 42.6	5 44.6	+ 7 7.3	+0.0441	0.5758	0.1269	+28	-41
χ^2 Sagittarii	6.3	0.02	5.8	24 37.0	5 47.3	+ 7 10.0	-0.0472	0.5757	0.1270	+23	-46
χ^3 Sagittarii	5.6	0.02	5.9	24 9.9	5 50.8	+ 7 13.3	-0.5051	0.5757	0.1271	0	-77
A ¹ Sagittarii	5.7	-0.04	-5.7	-24 56.8	10 9.4	+11 22.1	+0.8731	0.5725	+0.1378	+65	+ 7
A ² Sagittarii	4.7	-0.04	-5.7	-25 6.7	10 25.9	+11 38.0	+1.0832	0.5723	+0.1385	+65	+23

NEW MOON.

FEBRUARY.

67 Aquarii	6.4	+0.01	-2.4	- 7 30.1	8 2 5.5	+ 0 24.4	+1.1971	0.5070	+0.2555	+82	+25
B. A. C. 7951	6.7	0.00	1.9	4 45.8	4 33.1	+ 2 47.8	-1.1091	0.5058	0.2563	-19	-90
B. A. C. 7986	5.9	0.03	1.7	5 32.3	8 25.7	+ 6 33.8	+0.7094	0.5041	0.2575	+84	- 6
B. A. C. 7993	6.6	0.02	-1.7	- 5 21.7	9 33.2	+ 7 39.3	+0.8102	0.5035	0.2575	+69	- 1
9 Piscium	6.6	+0.07	+0.3	+ 0 33.4	4 1 43.2	- 0 38.0	-1.4040	0.4980	+0.2585	-49	-89
12 Piscium	6.8	0.10	-0.1	- 1 36.1	2 56.8	+ 0 33.6	+1.2525	0.4977	0.2584	+88	+30
15 Piscium	6.6	0.09	+0.8	+ 0 44.7	6 12.5	+ 3 43.8	-0.4497	0.4968	0.2580	+20	-70
16 Piscium	5.8	0.09	1.0	1 31.9	6 42.7	+ 4 13.2	-1.1739	0.4968	0.2580	-23	-88
λ Piscium	4.5	0.10	1.1	1 12.8	9 48.5	+ 7 13.8	-0.0317	0.4962	0.2574	+42	-45
19 Piscium	4.9	+0.11	+1.5	+ 2 54.9	12 11.1	+ 9 32.5	-1.2721	0.4957	+0.2569	-31	-87
22 Piscium	5.0	0.13	1.7	2 21.5	15 14.2	-11 29.5	+0.1168	0.4953	0.2561	+50	-37
25 Piscium	6.4	0.15	1.5	1 31.1	15 50.9	-10 53.8	+1.1886	0.4951	0.2559	+90	+24
45 Piscium	6.9	0.24	3.8	7 7.4	5 9 47.2	+ 6 32.8	-0.4044	0.4943	0.2482	+22	-65
75 Piscium	6.0	0.38	6.5	12 24.3	6 8 5.6	+ 4 14.2	-0.8437	0.4973	0.2322	- 2	-78
7 Piscium	3.7	+0.49	+7.7	+14 49.0	21 27.9	- 6 46.2	-0.4851	0.5013	+0.2193	+28	-65
101 Piscium	6.3	0.52	7.8	14 8.2	23 45.3	- 4 32.7	+0.7656	0.5020	0.2168	+90	+ 2
103 Piscium	6.8	0.53	8.5	16 6.3	7 1 34.8	- 2 46.3	-1.0160	0.5026	0.2148	-14	-74
105 Piscium	6.3	0.54	8.4	15 53.1	1 48.2	- 2 33.3	-0.7256	0.5027	0.2145	+ 5	-74
3 Arietis	6.0	0.57	8.9	16 53.9	5 26.3	+ 0 58.5	-1.0741	0.5041	0.2103	-18	-73
4 Arietis	5.7	+0.58	+8.7	+16 26.7	6 16.9	+ 1 47.6	-0.3954	0.5043	+0.2093	+22	-58

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

FEBRUARY.

THE STAR'S					AT CONJUNCTION IN R. A.							Limiting Parallels	
Name.	Mag.	Red'ns from 1897.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.		
		$\Delta\alpha$	$\Delta\delta$										
ϵ Arietis	5.7	+0.63	+ 9.2	+17 19.0	7 11 4.3	+ 6 26.7	-0.3713	0.5064	+0.2035	+23	-56		
15 Arietis	5.7	0.70	9.9	19 1.0	17 55.4	-10 54.3	-0.8890	0.5095	0.1945	- 6	-71		
B. A. C. 686	7.2	0.72	10.0	19 8.1	19 38.5	- 9 14.1	-0.6876	0.5104	0.1921	+ 6	-70		
θ Arietis	5.7	0.75	10.2	19 25.6	21 45.9	- 7 10.6	-0.6069	0.5114	0.1891	+11	-67		
23 Arietis	7.5	0.76	10.1	19 13.1	22 20.9	- 6 36.5	-0.2664	0.5117	0.1883	+29	-48		
26 Arietis	6.0	+0.83	+10.3	+19 24.1	8 4 6.6	- 1 1.4	+0.5929	0.5146	+0.1798	+83	- 3		
ν Arietis	5.7	0.88	11.1	21 31.1	8 11.5	+ 2 56.0	-1.0302	0.5168	0.1735	-17	-68		
ϵ Arietis	4.6	1.02	12.0	20 55.9	18 17.1	-11 17.0	+1.2871	0.5224	0.1567	+90	+52		
64 Arietis	5.7	1.19	12.1	24 21.8	9 6 20.2	+ 0 23.2	-0.7465	0.5294	0.1348	+ 1	-64		
7 Tauri	6.0	1.26	11.9	24 7.3	11 8.7	+ 5 2.4	+0.1445	0.5322	0.1253	+52	-19		
11 Tauri	6.7	+1.32	+12.1	+25 0.0	14 6.0	+ 7 53.9	-0.4618	0.5340	+0.1194	+18	-51		
γ Pleiadum	6.3	1.35	11.7	23 57.9	16 0.2	+ 9 44.3	+0.8983	0.5351	0.1155	+90	+23		
17 Tauri	4.3	1.35	11.7	23 47.5	16 2.4	+ 9 46.4	+1.0964	0.5351	0.1154	+90	+37		
18 Tauri	6.3	1.35	11.9	24 31.1	16 9.7	+ 9 53.6	+0.3094	0.5351	0.1151	+62	- 9		
19 Tauri	5.0	1.35	11.8	24 8.8	16 11.3	+ 9 55.1	+0.7227	0.5351	0.1151	+90	+12		
20 Tauri	5.0	+1.36	+11.7	+24 2.9	16 28.7	+10 11.9	+0.8642	0.5354	+0.1145	+90	+21		
21 Tauri	7.0	1.36	11.8	24 14.2	16 30.8	+10 13.9	+0.6621	0.5354	0.1144	+90	+ 9		
22 Tauri	7.0	1.36	11.8	24 12.6	16 34.8	+10 17.8	+0.6990	0.5354	0.1143	+90	+11		
η Tauri	3.1	1.37	11.6	23 47.4	17 15.3	+10 56.9	+1.2380	0.5358	0.1129	+90	+51		
B. A. C. 1192	6.0	1.39	11.9	25 16.3	18 32.4	-11 48.5	-0.2510	0.5366	0.1102	+29	-38		
ρ Tauri	6.0	+1.54	+12.0	+26 12.9	10 3 57.0	- 2 42.9	-0.3473	0.5419	+0.0898	+24	-41		
ϕ Tauri	5.3	1.61	12.1	27 6.5	8 14.9	+ 1 26.4	-0.9613	0.5442	0.0800	-14	-63		
χ Tauri	5.7	1.62	11.5	25 23.4	9 17.1	+ 2 26.4	+1.0058	0.5447	0.0777	+90	+34		
β Tauri	1.8	2.09	10.2	28 31.4	11 13 16.2	+ 5 26.7	-1.1870	0.5570	+0.0088	-38	-61		
136 Tauri	5.3	2.26	8.5	27 35.4	18 0 54.8	- 7 19.9	-0.2475	0.5601	-0.0216	+29	-29		
ϵ Geminorum	3.2	+2.50	+ 4.8	+25 14.1	22 31.7	-10 30.2	+1.1905	0.5624	-0.0786	+90	+49		
37 Geminorum	6.3	2.56	4.2	25 30.3	18 3 22.3	- 5 50.1	+0.4881	0.5623	0.0913	+76	+ 2		
39 Geminorum	6.3	2.59	4.2	26 13.0	4 50.8	- 4 24.8	+0.4070	0.5622	0.0950	+20	-45		
40 Geminorum	6.3	2.58	4.1	26 3.3	5 7.7	- 4 8.6	-0.2611	0.5622	0.0957	+28	-37		
48 Geminorum	6.0	2.61	2.8	24 18.1	10 42.2	+ 1 13.8	+1.0264	0.5617	0.1099	+90	+33		
49 Geminorum	7.2	+2.63	+ 3.1	+25 55.2	10 50.0	+ 1 21.3	-0.7045	0.5616	-0.1103	+ 3	-64		
B. A. C. 2363	7.3	2.64	2.8	24 53.2	11 32.8	+ 2 2.5	+0.3118	0.5616	0.1121	+63	- 9		
52 Geminorum	6.3	2.63	2.8	25 3.9	11 39.0	+ 2 8.5	+0.1123	0.5616	0.1123	+50	-19		
A Geminorum	5.7	2.67	2.3	25 14.9	15 24.7	+ 5 46.0	-0.5227	0.5610	0.1217	+14	-54		
κ Geminorum	3.7	2.73	+ 0.5	24 38.7	14 0 26.5	- 9 31.7	-1.0798	0.5593	0.1435	-22	-65		
82 Geminorum	6.3	+2.72	0.0	+23 23.7	2 14.4	- 7 47.7	-0.0274	0.5589	-0.1477	+42	-29		
84 Geminorum	6.8	2.74	- 0.5	22 35.9	4 11.0	- 5 55.3	+0.5178	0.5585	0.1522	+78	- 2		
7 Cancri	6.3	2.74	1.2	22 21.5	8 53.5	- 1 22.9	+0.0262	0.5573	0.1630	+45	-28		
μ^1 Cancri	6.3	2.76	1.3	22 55.7	9 57.2	- 0 21.5	-0.7442	0.5570	0.1653	+ 2	-66		
μ^2 Cancri	5.7	2.74	1.6	21 52.8	10 36.3	+ 0 16.2	+0.2449	0.5568	0.1668	+58	-18		
B. A. C. 2788	6.0	+2.75	- 2.7	+21 4.3	16 7.3	+ 5 35.5	+0.1354	0.5552	-0.1786	+51	-24		
η Cancri	5.4	2.78	3.5	20 47.4	21 34.3	+10 50.9	-0.5748	0.5535	0.1899	+12	-64		
35 Cancri	6.3	2.76	3.8	19 56.6	22 44.6	+11 58.8	+0.0817	0.5532	0.1922	+48	-28		
B. A. C. 2899	7.2	2.76	4.2	19 37.5	23 49.9	-10 58.2	+0.2012	0.5528	0.1944	+55	-23		
38 Cancri	7.0	2.77	4.3	20 8.4	15 0 40.9	-10 9.0	-0.4994	0.5526	0.1961	+16	-60		
B. A. C. 2914	7.2	+2.76	- 4.3	+19 54.1	0 44.6	-10 5.4	-0.2640	0.5525	-0.1962	+29	-47		
39 Cancri	7.0	2.77	4.3	20 22.2	0 51.1	- 9 59.2	-0.7710	0.5525	0.1964	+ 1	-64		
40 Cancri	7.3	2.77	4.3	20 20.0	0 53.4	- 9 57.0	-0.7409	0.5525	0.1965	+ 3	-69		
B. A. C. 2919	7.3	2.77	4.3	20 1.9	0 58.4	- 9 52.1	-0.4440	0.5525	0.1966	+19	-57		
ϵ Cancri	7.2	2.77	4.4	19 54.5	1 0.7	- 9 49.8	-0.3225	0.5525	0.1967	+26	-50		
ϵ Cancri	7.1	+2.77	- 4.4	+20 5.0	1 7.8	- 9 43.0	-0.5275	0.5524	-0.1969	+15	-62		
B. A. C. 2931	7.5	2.77	4.4	20 14.4	1 37.3	- 9 14.5	-0.7873	0.5522	0.1979	0	-70		
δ Cancri	4.0	2.75	4.8	18 31.9	2 54.6	- 7 59.9	+0.7279	0.5519	0.2003	+90	+ 4		
68 Cancri	7.5	2.75	6.1	17 29.0	10 32.2	- 0 38.2	+0.2283	0.5494	0.2143	+56	-24		
B. A. C. 3103	7.5	2.76	1.4	17 31.5	12 34.3	+ 1 19.7	-0.2462	0.5487	0.2178	+30	-49		
π^1 Cancri	6.3	+2.73	- 7.0	+15 24.5	15 20.6	+ 4 0.2	+1.3156	0.5478	-0.2225	+90	+47		

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

FEBRUARY.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1897.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	s'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
π^2 Cancri	6.0	+2.73	-7.2	+15 22.0	15 16 38.0	+5 15.0	+1.0699	0.5474	-0.2246	+90	+22
7 Leonis	6.3	2.73	8.7	14 50.2	16 2 2.0	-9 40.2	-0.5660	0.5445	0.2387	+14	-70
11 Leonis	6.8	2.73	8.8	14 48.6	3 0.8	-8 43.3	-0.7732	0.5442	0.2401	+2	-71
ψ Leonis	6.0	2.73	9.1	14 29.4	5 37.7	-6 11.7	-1.0770	0.5435	0.2436	-17	-76
18 Leonis	6.0	2.71	9.4	12 16.9	6 52.3	-4 59.5	-0.8773	0.5432	0.2453	+90	+7
19 Leonis	6.0	+2.69	-9.5	+12 2.5	7 21.3	-4 31.6	+1.0036	0.5430	-0.2459	+90	+15
21 Leonis	6.8	2.70	9.7	12 19.2	8 54.5	-3 1.5	+0.3347	0.5426	0.2478	+62	-22
23 Leonis	6.3	2.72	9.7	13 32.7	8 59.5	-2 56.7	-0.9361	0.5426	0.2479	-8	-76
ν Leonis	5.3	2.70	10.1	12 56.0	12 18.8	+0 15.9	-1.1414	0.5417	0.2519	-22	-77
A Leonis	4.7	2.67	10.7	10 30.0	16 48.9	+4 37.1	+0.1940	0.5406	0.2569	+54	-30
44 Leonis	6.0	+2.63	-11.7	+9 18.3	17 0 52.9	-11 35.1	-0.6958	0.5391	-0.2646	+7	-81
48 Leonis	5.5	2.60	12.1	7 28.8	5 21.3	-7 15.5	-0.0371	0.5383	0.2681	+41	-44
35 ¹ Sextantis	6.2	2.54	12.5	5 17.0	9 21.1	-3 23.7	+1.1092	0.5378	0.2709	+90	+16
37 Sextantis	6.3	2.56	12.7	6 54.7	10 38.1	-2 9.2	-0.8868	0.5377	0.2717	-4	-83
δ Leonis	5.3	2.50	13.2	4 10.0	17 25.5	+4 24.9	+0.0302	0.5371	0.2752	+45	-41
ρ^2 Leonis	6.2	+2.48	-13.4	+2 30.7	20 25.6	+7 19.1	+0.8720	0.5370	-0.2767	+90	+3
75 Leonis	5.7	2.46	13.8	2 34.4	18 1 16.4	-11 59.7	-0.5338	0.5370	0.2778	+16	-75
76 Leonis	6.3	2.45	13.8	2 12.7	2 2.4	-11 15.1	-0.3827	0.5370	0.2780	+24	-65
79 Leonis	6.0	2.45	14.0	+1 58.1	4 26.4	-8 56.0	-0.8063	0.5371	0.2784	+1	-71
ν Leonis	4.4	2.39	14.2	-0 15.5	10 29.2	-3 5.1	-0.2505	0.5375	0.2788	+30	-57
ρ Virginis	5.7	+2.21	-14.2	-8 53.3	19 12 47.0	-1 39.8	+1.1554	0.5431	-0.2695	+81	+22
χ Virginis	5.2	2.20	14.5	7 26.0	15 16.8	+0 45.0	-0.9729	0.5439	0.2676	-11	-90
75 Virginis	6.0	2.01	13.4	14 50.2	20 15 9.9	-0 11.4	-0.3379	0.5545	0.2414	+56	-26
83 Virginis	6.0	1.98	13.0	15 39.9	20 12.7	+4 40.7	-0.0307	0.5570	0.2338	+36	-44
85 Virginis	6.5	1.97	13.1	15 15.2	20 41.1	+5 8.1	-0.5540	0.5572	0.2330	+9	-79
B. A. C. 4722	5.8	+1.87	-12.4	-17 43.4	21 9 22.8	-6 37.9	-0.9008	0.5667	-0.2109	-14	-90
42 Libræ	5.7	1.57	9.6	23 29.2	22 19 49.5	+2 26.1	-1.0558	0.5825	0.1306	-33	-90
δ Scorpii	5.3	1.53	8.7	25 26.4	23 59.9	+6 26.5	+0.4036	0.5836	0.1192	+46	-21
A ¹ Scorpii	5.2	1.52	8.8	25 1.3	23 1 2.3	+7 26.5	-0.1434	0.5846	0.1163	+17	-52
B. A. C. 5253	5.8	1.51	9.1	24 13.7	1 9.8	+7 33.7	-0.9629	0.5846	0.1159	-29	-90
3 Scorpii	6.7	+1.51	-8.8	-24 56.4	1 27.0	+7 50.1	-0.2738	0.5847	-0.1151	+10	-60
4 Scorpii	6.3	1.51	8.5	25 57.9	1 45.9	+8 8.3	+0.7292	0.5849	0.1143	+64	-2
π Scorpii	3.4	1.50	8.5	25 49.2	3 4.5	+9 23.8	+0.4353	0.5853	0.1106	+48	-19
B. A. C. 5314	5.7	1.48	8.5	25 34.8	4 50.1	+11 5.2	+0.0015	0.5860	0.1056	+23	-43
B. A. C. 5347	6.0	1.46	8.2	26 3.1	6 40.8	-11 8.5	-0.2898	0.5865	0.1003	+38	-27
σ Scorpii	3.4	+1.41	-8.3	-25 20.9	11 46.0	-6 11.6	-0.8978	0.5885	-0.0854	-27	-90
α Scorpii	1.2	1.38	7.8	26 12.3	14 55.9	-3 9.3	-0.2836	0.5887	0.0760	+7	-61
B. A. C. 5800	7.5	1.20	6.7	26 51.8	24 8 11.0	-10 36.2	-0.4736	0.5902	0.0236	-9	-75
A Ophiuchi	4.9	1.20	6.8	26 27.2	8 38.5	-10 9.8	-0.9040	0.5901	0.0222	-33	-90
B. A. C. 5813	6.8	1.19	6.8	26 24.0	8 58.8	-9 50.3	-0.9656	0.5901	0.0211	-37	-90
38 Ophiuchi	6.7	+1.19	-6.8	-26 31.1	9 30.3	-9 20.1	-0.8562	0.5901	-0.0195	-30	-90
43 Ophiuchi	5.8	1.17	6.1	28 2.7	11 40.4	-7 15.3	-0.6734	0.5899	-0.0129	+57	-4
3 Sagittarii	4.6	1.06	5.9	27 47.6	21 1.8	+1 43.5	+0.4308	0.5883	+0.0158	+40	-19
B. A. C. 6194	5.1	0.94	5.3	27 4.8	25 8 57.0	-10 49.8	+0.0987	0.5841	0.0513	+24	-38
B. A. C. 6394	6.2	0.82	5.3	25 6.9	19 37.8	-0 24.2	-1.2237	0.5791	0.0818	-53	-90
ϕ Sagittarii	3.7	+0.83	-4.7	-27 5.9	19 55.3	-0 17.2	+0.8547	0.5788	+0.0825	+63	+6
σ Sagittarii	2.3	0.79	4.7	26 25.6	23 48.7	+3 27.0	+0.5008	0.5766	0.0932	+50	-15
χ^1 Sagittarii	5.4	0.67	4.5	24 42.6	26 12 10.5	-8 39.3	+0.0695	0.5686	0.1250	+29	-39
χ^2 Sagittarii	6.3	0.67	4.5	24 36.9	12 12.9	-8 37.0	-0.0234	0.5686	0.1251	+24	-45
χ^3 Sagittarii	5.6	0.67	4.7	24 9.9	12 16.5	-8 33.6	-0.4852	0.5686	0.1253	+1	-76
λ^1 Sagittarii	5-7	+0.64	-4.2	-24 56.7	16 40.7	-4 19.2	+0.9039	0.5654	+0.1358	+65	+9
λ^2 Sagittarii	4.7	0.64	4.2	25 6.7	16 57.5	-4 2.9	+1.1137	0.5652	0.1365	+65	+26
53 Sagittarii	6.7	0.62	4.5	23 39.5	18 18.5	-2 44.9	-0.2158	0.5642	0.1395	+16	-56
B. A. C. 6727	6.2	0.62	4.5	23 40.0	18 25.9	-2 37.8	-0.1902	0.5641	0.1399	+17	-55
4 Capricorni	6.1	0.49	4.0	22 7.7	27 10 54.4	-10 44.6	+0.8036	0.5516	0.1748	+68	+2
ν Capricorni	5.3	+0.40	-4.4	-18 30.1	20 54.0	-1 5.6	-1.1740	0.5438	+0.1929	-35	-90

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

FEBRUARY.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1897.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
19 Capricorni	6.1	+0.37	-3.9	-18 18.9	28 3 43.1	+5 29.8	-0.0209	0.5386	+0.2039	+33	-44
21 Capricorni	6.4	0.36	3.7	17 56.0	6 34.0	+8 15.1	+0.1637	0.5365	0.2081	+44	-34
θ Capricorni	4.1	0.33	3.7	17 38.6	8 57.8	+10 34.2	+0.3599	0.5359	0.2116	+55	-24
29 Capricorni	5.7	+0.31	-3.7	-15 36.0	13 40.1	-8 52.6	-0.7946	0.5313	+0.2179	-5	-90
					NEW MOON.						

MARCH.

51 Piscium	5.8	+0.13	+2.4	+6 23.3	4 21 26.4	-4 6.3	+1.2451	0.4969	+0.2465	+90	+31
75 Piscium	6.0	0.16	4.6	12 24.3	5 15 58.8	-10 4.9	-0.9252	0.5001	0.2328	-7	-78
η Piscium	3.7	+0.23	+5.8	+14 49.0	6 5 17.5	+2 51.2	-0.5750	0.5037	+0.2197	+13	-70
101 Piscium	6.3	0.25	5.9	14 8.2	7 34.3	+5 4.0	+0.6755	0.5045	0.2172	+90	-3
103 Piscium	6.8	0.25	6.4	16 6.3	9 23.5	+6 50.1	-1.1083	0.5050	0.2152	-20	-74
105 Piscium	6.3	0.26	6.3	15 53.1	9 36.8	+7 3.1	-0.8178	0.5051	0.2149	-1	-74
3 Arietis	6.0	0.27	6.8	16 53.9	13 14.1	+10 34.1	-1.1690	0.5064	0.2107	-26	-73
4 Arietis	5.7	+0.28	+6.7	+16 26.7	14 4.6	+11 23.1	-0.4901	0.5067	+0.2097	+17	-64
ι Arietis	5.7	0.32	7.1	17 19.0	18 51.0	-6 58.6	-0.4689	0.5086	0.2037	+18	-61
15 Arietis	5.7	0.37	7.8	19 1.0	7 1 41.1	-1 20.8	-0.9912	0.5114	0.1946	-13	-71
B. A. C. 686	7.2	0.39	8.0	19 8.0	3 20.8	+0 15.9	-0.7991	0.5121	0.1923	0	-71
θ Arietis	5.7	0.40	8.1	19 25.6	5 31.4	+2 22.6	-0.7098	0.5130	0.1892	+5	-71
23 Arietis	7.5	+0.41	+8.1	+19 13.1	6 2.8	+2 53.1	-0.3802	0.5132	+0.1884	+23	-54
26 Arietis	6.0	0.47	8.3	19 24.0	11 51.8	+8 31.5	+0.4890	0.5159	0.1797	+74	-8
ν Arietis	5.7	0.50	9.2	21 31.1	15 56.7	-11 31.0	-1.1397	0.5178	0.1733	-26	-68
ε Arietis	4.6	0.62	9.2	20 55.9	8 2 3.3	-1 43.1	+1.1800	0.5227	0.1564	+90	+39
64 Arietis	5.7	0.76	10.4	24 21.7	14 9.4	+10 0.1	-0.8630	0.5274	0.1342	-6	-66
7 Tauri	6.0	+0.82	+10.4	+24 7.3	18 59.6	-9 19.0	+0.0299	0.5312	+0.1248	+45	-25
11 Tauri	6.7	0.87	10.7	24 59.9	21 58.2	-6 26.2	-0.5795	0.5326	0.1188	+11	-58
g Pleiadum	6.3	0.90	10.4	23 58.1	23 53.3	-4 34.9	+0.7860	0.5336	0.1148	+90	+16
17 Tauri	4.3	0.90	10.3	23 47.5	23 55.5	-4 32.8	+0.9850	0.5336	0.1148	+90	+29
18 Tauri	6.3	0.90	10.6	24 31.1	9 0 2.8	-4 25.6	+0.1926	0.5337	0.1145	+55	-15
19 Tauri	5.0	+0.90	+10.4	+24 8.8	0 4.5	-4 24.0	+0.6097	0.5337	+0.1145	+90	+6
20 Tauri	5.0	0.90	10.4	24 2.9	0 22.0	-4 7.0	+0.7517	0.5338	0.1141	+90	+14
21 Tauri	7.0	0.90	10.5	24 14.1	0 24.1	-4 5.0	+0.5487	0.5339	0.1138	+81	+3
22 Tauri	7.0	0.91	10.5	24 12.5	0 28.1	-4 1.1	+0.5857	0.5339	0.1136	+85	+5
η Tauri	3.1	0.92	10.3	23 47.4	1 9.0	-3 21.6	+1.1270	0.5342	0.1112	+90	+40
28 Tauri	6.2	+0.93	+10.3	+23 49.5	1 56.8	-2 35.4	+1.1767	0.5346	+0.1106	+90	+45
B. A. C. 1192	6.0	0.93	10.8	25 16.2	2 26.7	-2 6.4	-0.3706	0.5348	0.1095	+23	-45
ρ Tauri	6.0	1.07	10.9	26 12.9	11 56.9	+7 4.9	-0.4670	0.5393	0.0891	+17	-49
φ Tauri	5.3	1.14	11.1	27 6.5	16 17.7	+11 17.0	-1.0849	0.5412	0.0794	-25	-63
χ Tauri	5.7	1.15	10.5	25 23.3	17 20.7	-11 42.2	+0.8931	0.5417	+0.0770	+90	+26
136 Tauri	5.3	+1.81	+8.8	+27 35.4	11 9 37.5	+3 10.7	-0.3657	0.5544	-0.0194	+22	-36
ε Geminorum	3.2	2.12	5.6	25 14.1	12 7 41.4	+0 27.5	+1.0897	0.5556	0.0773	+90	+41
37 Geminorum	6.3	2.19	5.0	25 30.3	12 38.4	+5 13.6	+0.3834	0.5555	0.0897	+68	-3
39 Geminorum	6.3	2.23	5.0	26 13.0	14 8.6	+6 40.9	-0.5183	0.5554	0.0934	+14	-52
40 Geminorum	6.3	2.22	4.9	26 3.3	14 25.8	+6 57.5	-0.3709	0.5553	0.0941	+22	-43
48 Geminorum	6.0	+2.28	+3.7	+24 18.1	20 7.4	-11 33.1	+0.9289	0.5549	-0.1081	+90	+26
49 Geminorum	7.2	2.30	4.2	25 55.3	20 15.5	-11 25.5	-0.8155	0.5549	0.1084	-4	-64
B. A. C. 2363	7.3	2.29	3.8	24 53.2	20 59.2	-10 43.2	+0.2089	0.5548	0.1102	+56	-14
52 Geminorum	6.3	2.30	3.8	25 3.9	21 5.4	-10 37.1	+0.0080	0.5548	0.1104	+44	-24
Δ Geminorum	5.7	2.35	3.4	25 14.9	18 0 55.6	-6 55.0	-0.6296	0.5543	0.1197	+8	-61
κ Geminorum	3.7	+2.45	+1.7	+24 38.7	10 8.3	+1 58.2	-1.1855	0.5529	-0.1413	-33	-65
82 Geminorum	6.3	2.45	1.1	23 23.8	11 58.3	+3 44.3	-0.1247	0.5526	0.1454	+36	-34
84 Geminorum	6.8	2.45	+0.5	22 36.0	13 57.6	+5 39.4	+0.4242	0.5523	0.1499	+70	-7
γ Cancri	6.3	2.50	-0.2	22 21.6	18 44.7	+10 16.4	-0.0660	0.5512	0.1603	+39	-33
μ Cancri	6.3	2.52	0.2	22 55.8	19 49.5	+11 19.0	-0.8405	0.5511	0.1628	-4	-67
μ Cancri	5.7	+2.51	-0.6	+21 52.8	20 29.3	+11 57.4	+0.1552	0.5509	-0.1642	+52	-22

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MARCH.

THE STAR'S					AT CONJUNCTION IN R. A.							Limiting Parallels	
Name.	Mag.	Red'ns from 1877.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	S	Y	N.	S.		
		$\Delta\alpha$	$\Delta\delta$										
		s	"	"	d h m	h m							
B. A. C. 2788	6.0	+2.54	-1.8	+21 4.3	14 2 5.9	-6 37.8	+0.0494	0.5492	-0.1759	+46	-29		
7 Cancri	5.4	2.60	2.6	20 47.4	7 38.0	-1 17.3	-0.6600	0.5482	0.1871	+7	-68		
35 Cancri	6.3	2.59	3.0	19 56.6	8 49.1	-0 8.6	+0.0010	0.5481	0.1895	+43	-33		
B. A. C. 2899	7.2	2.59	3.4	19 37.5	9 55.5	+0 55.5	+0.1214	0.5475	0.1916	+50	-26		
38 Cancri	7.0	2.60	3.4	20 8.5	10 47.1	+1 45.4	-0.5806	0.5473	0.1933	+12	-65		
B. A. C. 2914	7.2	+2.60	-3.5	+19 54.2	10 50.9	+1 49.1	-0.3445	0.5473	-0.1934	+25	-51		
39 Cancri	7.0	2.61	3.3	20 22.1	10 57.5	+1 55.4	-0.8533	0.5473	0.1936	+4	-70		
40 Cancri	7.3	2.61	3.3	20 20.1	10 59.8	+1 57.6	-0.8229	0.5472	0.1938	-2	-70		
B. A. C. 2919	7.3	2.60	3.4	20 1.9	11 5.0	+2 2.6	-0.5253	0.5472	0.1939	+15	-62		
e Cancri	7.2	2.60	3.5	19 54.5	11 7.2	+2 4.8	-0.4030	0.5472	0.1939	+21	-55		
e Cancri	7.1	+2.61	-3.4	+20 5.0	11 14.4	+2 11.7	-0.6086	0.5472	-0.1942	+10	-66		
B. A. C. 2931	7.5	2.61	3.5	20 14.4	11 44.3	+2 40.6	-0.8689	0.5471	0.1951	-5	-70		
d Cancri	4.0	2.60	4.2	18 31.9	13 2.8	+3 56.4	+0.6530	0.5469	0.1978	+90	0		
68 Cancri	7.5	2.64	5.5	17 29.0	20 45.7	+11 23.5	+0.1558	0.5456	0.2118	+52	-27		
B. A. C. 3103	7.5	2.66	5.8	17 31.5	22 49.0	-10 37.5	-0.3232	0.5452	0.2153	+26	-53		
π_1 Cancri	6.3	+2.64	-6.6	+15 24.5	15 1 37.0	-7 55.2	+1.2536	0.5445	-0.2200	+90	+39		
π_2 Cancri	6.0	2.65	6.7	15 22.0	2 55.8	-6 39.0	+1.0087	0.5444	0.2223	+90	+19		
7 Leonis	6.3	2.71	8.5	14 50.2	12 22.9	+2 28.7	-0.6199	0.5426	0.2367	+10	-73		
11 Leonis	6.8	2.72	8.6	14 48.6	13 2.9	+3 25.9	-0.8261	0.5423	0.2381	-1	-75		
ψ Leonis	6.0	2.73	9.0	14 29.4	15 59.4	+5 58.1	-1.1264	0.5420	0.2417	-21	-76		
18 Leonis	6.0	+2.72	-9.6	+12 16.9	17 14.3	+7 10.5	+0.8286	0.5418	-0.2434	+90	+5		
19 Leonis	7.0	2.72	9.7	12 2.5	17 43.3	+7 38.5	+0.9562	0.5418	0.2440	+90	+12		
21 Leonis	6.8	2.72	9.8	12 19.2	19 16.6	+9 8.7	-0.2902	0.5415	0.2460	+60	-24		
23 Leonis	6.3	2.73	9.6	13 32.7	19 21.7	+9 13.6	-0.9807	0.5415	0.2462	-11	-76		
ν Leonis	5.3	2.74	10.2	12 56.0	22 41.2	-11 33.6	-1.1801	0.5411	0.2503	-25	-77		
A Leonis	4.7	+2.72	-11.2	+10 30.0	16 3 11.3	-7 12.4	+0.1590	0.5406	-0.2555	+52	-32		
44 Leonis	6.0	2.73	12.3	9 18.3	11 13.8	+0 34.0	-0.7174	0.5401	0.2637	+6	-80		
48 Leonis	5.5	2.72	13.0	7 28.8	15 40.5	+4 51.9	-0.0540	0.5400	0.2675	+40	-45		
35 ¹ Sextantis	6.2	2.68	13.8	5 17.0	19 38.6	+8 42.0	+1.0921	0.5400	0.2705	+90	+18		
37 Sextantis	6.3	2.70	13.7	6 54.7	20 54.8	+9 55.7	-0.8920	0.5400	0.2714	-4	-83		
d Leonis	5.3	+2.68	-14.8	+4 10.0	17 3 37.8	-7 34.7	+0.0306	0.5404	-0.2754	+45	-41		
ρ^3 Leonis	6.2	2.66	15.2	2 30.6	6 35.6	-4 42.8	+0.8712	0.5407	0.2767	+90	+3		
75 Leonis	5.7	2.67	15.6	2 34.3	11 22.1	-0 5.9	-0.5172	0.5414	0.2786	+17	-74		
76 Leonis	6.3	2.67	15.7	2 12.6	12 7.5	+0 38.0	-0.3665	0.5415	0.2788	+24	-64		
79 Leonis	6.0	2.67	15.9	+1 58.1	14 29.1	+2 54.8	-0.7827	0.5418	0.2794	+2	-76		
ν Leonis	4.4	+2.66	-16.5	-0 15.6	20 25.3	+8 39.1	-0.2218	0.5430	-0.2802	+32	-55		
η Virginis	5.7	2.62	17.7	8 53.3	18 22 5.3	+9 26.5	+1.2065	0.5517	0.2722	+81	+26		
χ Virginis	5.2	2.62	17.9	7 26.0	19 0 30.7	+11 46.9	-0.8910	0.5528	0.2704	-6	-90		
ψ Virginis	5.2	2.61	17.9	8 59.1	7 8.3	-5 49.5	-1.1313	0.5551	0.2647	-23	-90		
75 Virginis	6.0	2.57	17.4	14 50.3	23 38.8	+10 5.3	+0.4329	0.5650	0.2446	+61	-20		
83 Virginis	6.0	+2.57	-17.1	-15 40.0	20 4 31.4	-9 12.9	+0.0759	0.5677	-0.2370	+41	-39		
85 Virginis	6.5	2.56	17.1	15 15.3	4 59.0	-8 46.3	-0.4392	0.5680	0.2363	+14	-70		
B. A. C. 4722	5.8	2.53	16.4	17 43.5	17 14.6	+3 1.6	-0.7632	0.5753	0.2139	-6	-90		
42 Libræ	5.7	2.41	12.6	23 29.2	22 2 34.1	+11 2.1	-0.8940	0.5922	0.1321	-22	-90		
b Scorpii	5.3	2.39	11.7	25 26.5	6 37.4	-9 4.5	+0.5464	0.5936	0.1205	+55	-13		
A ² Scorpii	5.2	+2.38	-11.7	-25 1.4	7 37.9	-8 6.4	+0.0050	0.5939	-0.1175	+24	-43		
B. A. C. 5253	5.8	2.37	12.0	24 13.8	7 45.2	-7 59.4	-0.8002	0.5939	0.1172	-18	-90		
3 Scorpii	6.7	2.38	11.8	24 56.5	8 1.9	-7 43.5	-0.1206	0.5940	0.1163	+18	-50		
4 Scorpii	6.3	2.38	11.4	25 57.9	8 20.2	-7 25.9	+0.8686	0.5941	0.1154	+64	+7		
π Scorpii	3.4	2.37	11.4	25 49.2	9 36.7	-6 12.5	+0.5791	0.5945	0.1117	+57	-10		
B. A. C. 5314	5.7	+2.36	-11.2	-25 34.8	11 19.3	-4 34.1	+0.1527	0.5949	-0.1066	+32	-35		
B. A. C. 5347	6.0	2.35	10.9	26 3.2	13 7.1	-2 50.7	+0.4388	0.5953	0.1012	+47	-18		
σ Scorpii	3.4	2.30	10.6	25 20.9	18 4.4	+1 54.3	-0.7322	0.5963	0.0862	-17	-90		
a Scorpii	1.2	2.28	10.0	26 12.4	21 9.5	+4 51.7	-0.1219	0.5966	0.0766	+14	-50		
B. A. C. 5800	7.5	2.13	7.9	26 51.8	23 14 2.5	-2 57.2	-0.3084	0.5959	0.0236	0	-62		
A Ophiuchi	4.9	+2.12	-8.2	-26 27.2	14 29.6	-2 31.2	-0.7345	0.5959	-0.0220	-23	-90		

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MARCH.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1897.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
B. A. C. 5813	6.8	+2.11	-8.2	-26 24.0	23 14 49.4	- 2 12.3	-0.7954	0.5958	-0.0212	-26	-90
38 Ophiuchi	6.7	2.12	7.9	26 31.1	15 20.3	- 1 42.7	-0.6871	0.5957	0.0195	-20	-90
43 Ophiuchi	5.8	2.11	7.1	28 2.7	17 28.3	+ 0 20.1	+0.8280	0.5952	-0.0128	+62	+ 6
3 Sagittarii	4-6	2.00	6.2	27 47.6	24 2 41.2	+ 9 10.2	+0.5880	0.5923	+0.0159	+51	- 9
B. A. C. 6194	5.1	1.86	4.9	27 4.8	14 28.5	- 3 31.0	+0.2608	0.5866	+0.0514	+32	-28
λ Sagittarii	2.9	+1.81	-5.1	-25 28.8	18 23.8	+ 0 14.9	-1.1596	0.5843	+0.0628	-48	-90
B. A. C. 6369	6.2	1.72	4.4	25 6.9	25 1 4.9	+ 6 40.3	-1.0544	0.5800	0.0812	-38	-90
ϕ Sagittarii	3.7	1.73	3.7	27 5.9	1 22.4	+ 6 57.1	+1.0125	0.5798	0.0824	+63	-18
σ Sagittarii	2.3	1.68	3.6	26 25.5	5 14.9	+10 40.6	+0.6599	0.5770	0.0929	+61	- 6
ψ Sagittarii	5.4	1.57	2.9	25 26.1	13 32.4	- 5 20.9	+0.4959	0.5708	0.1143	+52	-15
χ^1 Sagittarii	5.4	+1.52	-4.8	-24 42.6	17 35.3	- 1 27.1	+0.2255	0.5676	+0.1242	+37	-31
χ^2 Sagittarii	6.3	1.52	2.8	24 36.9	17 38.4	- 1 24.2	+0.1343	0.5675	0.1243	+33	-36
χ^3 Sagittarii	5.6	1.51	2.9	24 9.9	17 42.0	- 1 20.7	-0.3268	0.5675	0.1245	+ 9	-63
λ^1 Sagittarii	5-7	1.47	2.2	24 56.7	22 6.8	+ 2 54.3	+1.0590	0.5639	0.1348	+65	+21
λ^2 Sagittarii	4.7	1.46	2.2	25 6.7	22 23.6	+ 3 10.6	+1.2703	0.5637	0.1355	+65	+46
53 Sagittarii	6.7	+1.43	-2.6	-23 39.8	23 44.8	+ 4 28.8	-0.0566	0.5626	+0.1386	+24	-46
B. A. C. 6727	6.2	1.43	2.5	23 39.9	23 52.2	+ 4 35.9	-0.0349	0.5625	0.1388	+25	-45
4 Capricorni	6.1	1.22	1.4	22 7.7	26 16 26.1	- 3 25.6	+0.9505	0.5486	0.1730	+68	+12
ν Capricorni	5.7	1.09	2.0	18 30.1	27 2 30.9	+ 6 18.6	-1.0382	0.5403	0.1906	-24	-90
19 Capricorni	6.1	1.02	1.2	18 18.8	9 24.3	-11 1.7	+0.1124	0.5348	0.2013	+41	-37
21 Capricorni	6.4	+0.99	-1.1	-17 56.0	12 17.0	- 8 14.6	+0.2939	0.5326	+0.2054	+51	-27
θ Capricorni	4.1	0.66	1.0	17 38.5	14 42.5	- 5 53.8	+0.4887	0.5307	0.2088	+62	-17
29 Capricorni	5.7	0.92	1.1	15 36.0	19 28.1	- 1 17.2	-0.6750	0.5274	0.2150	+ 2	-90
42 Capricorni	5.6	0.78	0.4	14 30.4	28 8 14.4	+11 15.4	+0.9995	0.5186	0.2292	+75	+12
50 Capricorni	6.9	0.76	0.9	12 10.2	10 51.3	-10 22.5	-0.8999	0.5169	0.2317	- 9	-90
ϵ^1 Aquarii	6.8	+0.64	-0.2	-11 19.6	23 5.1	+ 1 29.4	+1.0926	0.5104	+0.2416	+79	+18
B. A. C. 7774	6.4	0.62	0.3	9 33.2	29 2 25.0	+ 4 43.4	-0.0081	0.5084	0.2438	+40	-43
ρ Aquarii	5.6	0.61	-0.5	8 20.3	4 10.0	+ 6 25.3	-0.8907	0.5076	0.2449	- 6	-90
67 Aquarii	6.4	0.50	+0.2	7 30.1	16 24.0	- 5 41.8	+1.2409	0.5026	0.2509	+82	+29
B. A. C. 7951	6.7	0.48	-0.2	4 45.8	18 54.2	- 3 15.8	-1.0969	0.5017	0.2518	-19	-90
B. A. C. 7986	5.9	+0.46	+0.2	- 5 32.2	22 50.8	+ 0 34.2	+0.7368	0.5005	+0.2530	+82	+ 5
B. A. C. 7993	6.6	0.45	0.3	5 21.6	23 59.2	+ 1 40.5	+0.8337	0.5002	0.2533	+85	+ 1
12 Piscium	6.8	0.34	0.9	- 1 36.1	30 17 36.2	- 5 11.7	+1.2345	0.4964	0.2552	+88	+28
15 Piscium	6.6	0.32	0.8	+ 0 44.7	20 53.6	- 1 59.8	-0.4884	0.4962	0.2550	+18	-72
16 Piscium	5.8	0.32	0.8	1 31.9	21 24.1	- 1 30.1	-1.2181	0.4960	0.2550	-27	-88
λ Piscium	4.5	+0.30	+1.0	+ 1 12.8	31 0 31.2	+ 1 31.8	-0.0774	0.4959	+0.2546	+39	-47
19 Piscium	4.9	0.30	1.0	2 54.9	2 54.8	+ 3 51.5	-1.3316	0.4956	0.2542	-39	-87
22 Piscium	5.0	0.28	1.3	2 21.5	5 59.1	+ 6 50.7	+0.0581	0.4955	0.2535	+46	-40
25 Piscium	6.4	+0.27	+1.4	+ 1 31.1	6 36.0	+ 7 26.6	+1.1343	0.4955	+0.2534	+90	+20

APRIL.

15 Arietis	5.7	+0.22	+6.1	+19 1.0	8 8 31.5	+ 7 17.1	-1.1332	0.5133	+0.1937	-24	-71
B. A. C. 686	7.2	0.23	6.2	19 8.0	10 11.0	+ 8 53.7	-0.9447	0.5140	0.1914	-10	-71
θ Arietis	5.7	+0.24	+6.3	+19 25.6	12 21.5	+11 0.2	-0.8570	0.5150	+0.1883	- 4	-71
23 Arietis	7.5	0.24	6.3	19 13.1	12 52.9	+11 30.7	-0.5244	0.5152	0.1875	+15	-63
26 Arietis	6.0	0.28	6.6	19 24.0	18 41.5	- 6 51.3	+0.3353	0.5179	0.1789	+63	-16
ν Arietis	5.7	0.29	7.3	21 31.1	22 46.1	- 2 54.1	-1.3021	0.5198	0.1725	-46	-68
μ Arietis	6.0	0.32	7.0	19 34.5	4 0 34.0	- 1 9.4	+1.1655	0.5206	0.1696	+90	+36
ϵ Arietis	4.6	+0.37	+7.5	+20 55.8	8 52.5	+ 6 53.8	+1.0098	0.5245	+0.1556	+90	+26
64 Arietis	5.7	0.45	8.4	24 21.7	20 59.0	- 5 22.7	-1.0523	0.5302	0.1333	-21	-66
7 Tauri	6.0	0.50	8.5	24 7.3	5 1 49.7	- 0 41.3	-0.1620	0.5324	0.1238	+34	-35
11 Tauri	6.7	0.53	8.9	24 59.9	4 48.7	+ 2 11.9	-0.7764	0.5338	0.1178	- 1	-65
γ Pleiadum	6.3	0.56	8.7	23 58.1	6 44.1	+ 4 3.5	+0.5917	0.5346	0.1139	+85	+ 5
17 Tauri	4.3	+0.56	+8.6	+23 47.5	6 46.3	+ 4 5.6	+0.7913	0.5346	+0.1138	+90	+17

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

APRIL.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1897.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	z'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
18 Tauri	6.3	+0.56	+ 8.8	+24 31.1	5 6 53.6	+ 4 12.7	-0.0018	0.5346	+0.1136	+43	-25
19 Tauri	5.0	0.56	8.7	24 8.8	6 55.3	+ 4 14.3	+0.4145	0.5347	0.1135	+70	- 4
20 Tauri	5.0	0.56	8.7	24 2.9	7 12.9	+ 4 31.4	+0.5568	0.5348	0.1129	+82	+ 4
21 Tauri	7.0	0.56	8.7	24 14.1	7 15.0	+ 4 33.4	+0.3531	0.5348	0.1129	+65	- 7
22 Tauri	7.0	0.56	8.7	24 12.5	7 19.0	+ 4 37.3	+0.3898	0.5348	0.1127	+68	- 5
23 Tauri	4.7	+0.56	+ 8.6	+23 37.8	7 27.5	+ 4 45.5	+1.0489	0.5349	+0.1124	+90	+34
7 Tauri	3.1	0.57	8.6	23 47.3	8 0.0	+ 5 16.9	+0.9326	0.5352	0.1113	+90	+26
27 Tauri	4.0	0.58	8.6	23 44.4	8 47.4	+ 6 2.9	+1.0733	0.5355	0.1097	+90	+36
28 Tauri	6.2	0.58	8.6	23 49.4	8 48.0	+ 6 3.3	+0.9818	0.5355	0.1097	+90	+29
B. A. C. 1192	6.0	0.58	9.0	25 16.2	9 18.0	+ 6 32.4	-0.5695	0.5357	0.1086	+11	-57
2 Tauri	6.0	+0.68	+ 9.3	+26 12.9	18 50.6	- 8 13.9	-0.6769	0.5366	+0.0881	+ 4	-62
7 Tauri	5.7	0.75	9.0	25 23.3	9 16.3	- 2 59.0	+0.6847	0.5416	+0.0761	+90	+14
136 Tauri	5.3	1.33	8.3	27 35.4	7 17 0.8	-11 38.4	-0.6043	0.5504	-0.0215	+ 8	-53
139 Tauri	5.3	1.35	7.6	25 56.6	19 7.3	- 9 36.3	+1.1506	0.5505	0.0267	+90	+50
2 Geminorum	3.2	1.64	5.7	25 14.1	8 15 30.8	+10 4.6	+0.8599	0.5500	0.0764	+90	+25
MARS				+25 9.6	16 19.9	+10 52.1	+0.8765	0.5272	-0.0765	+90	+25
37 Geminorum	6.3	+1.71	+ 5.4	25 30.3	20 34.3	- 9 2.4	+0.1466	0.5494	0.0887	+52	-15
39 Geminorum	6.3	1.74	5.5	26 13.1	22 6.8	- 7 33.1	-0.7644	0.5492	0.0923	- 1	-64
40 Geminorum	6.3	1.74	5.4	26 3.3	22 24.6	- 7 15.9	-0.6164	0.5492	0.0930	+ 8	-58
6 Geminorum	5.7	1.74	4.6	24 21.8	23 45.6	- 5 57.7	+1.0886	0.5490	0.0962	+90	+38
48 Geminorum	6.0	+1.80	+ 4.2	+24 18.1	9 4 14.4	- 1 38.3	+0.6987	0.5485	-0.1067	+90	+12
49 Geminorum	7.2	1.82	4.7	25 55.3	4 27.5	- 1 25.5	-1.0744	0.5481	0.1067	-24	-64
B. A. C. 2363	7.3	1.82	4.3	24 53.2	5 7.3	- 0 47.3	-0.0289	0.5481	0.1087	+41	-26
52 Geminorum	6.3	1.82	4.3	25 3.9	5 13.9	- 0 40.8	-0.2323	0.5481	0.1089	+30	-37
A Geminorum	5.7	1.88	4.0	25 15.0	9 10.0	+ 3 7.1	-0.8767	0.5474	0.1179	- 8	-65
82 Geminorum	6.3	+2.00	+ 2.0	+23 23.8	20 30.4	- 9 55.8	-0.3632	0.5451	-0.1430	+23	-47
84 Geminorum	6.8	2.01	1.4	22 36.0	22 32.5	- 7 57.9	+0.1941	0.5446	0.1473	+55	-18
7 Cancri	6.3	2.07	0.8	22 21.6	10 3 28.1	- 3 12.4	-0.3010	0.5435	0.1976	+26	-45
μ^1 Cancri	6.3	2.09	0.8	22 55.8	4 34.7	- 2 8.0	-1.0841	0.5432	0.1599	-22	-67
μ^2 Cancri	5.7	2.08	+ 0.4	21 52.8	5 15.7	- 1 28.4	-0.0763	0.5430	0.1612	+39	-34
B. A. C. 2788	6.0	+2.13	- 0.9	+21 4.3	11 1.7	+ 4 5.9	-0.1790	0.5418	-0.1728	+33	-40
7 Cancri	5.4	2.20	1.3	20 47.4	16 43.3	+ 9 35.9	-0.8944	0.5405	0.1837	- 8	-69
35 Cancri	6.3	2.20	1.8	19 56.6	17 56.5	+10 46.8	-0.2243	0.5401	0.1860	+31	-44
B. A. C. 2899	7.2	2.20	2.2	19 37.6	19 4.7	+11 52.6	-0.1013	0.5399	0.1880	+38	-37
38 Cancri	7.0	2.22	2.2	20 8.5	19 57.8	-11 16.0	-0.8117	0.5397	0.1897	- 2	-70
B. A. C. 2914	7.2	+2.22	- 2.3	+19 54.2	20 1.8	-11 12.1	-0.5728	0.5397	-0.1898	+12	-65
39 Cancri	7.0	2.23	2.1	20 22.2	20 8.6	-11 5.6	-1.0882	0.5397	0.1900	-21	-70
40 Cancri	7.3	2.23	2.1	20 20.1	20 10.9	-11 3.4	-1.0571	0.5397	0.1901	-19	-70
B. A. C. 2919	7.3	2.23	2.2	20 2.0	20 16.2	-10 58.3	-0.7554	0.5397	0.1902	+ 1	-68
2 Cancri	7.2	2.22	2.3	19 54.5	20 18.5	-10 56.0	-0.6316	0.5397	0.1903	+ 9	-68
2 Cancri	7.1	+2.23	- 2.6	+20 5.0	20 26.0	-10 48.7	-0.8405	0.5396	-0.1905	- 4	-70
B. A. C. 2931	7.5	2.24	2.2	20 14.4	20 56.7	-10 19.1	-1.1031	0.5395	0.1915	-22	-70
6 Cancri	4.0	2.23	3.0	18 31.9	22 17.3	- 9 1.1	+0.4392	0.5392	0.1939	+70	-11
68 Cancri	7.5	2.30	4.2	17 29.0	11 6 13.4	- 1 20.8	-0.0539	0.5376	0.2076	+40	-38
B. A. C. 3103	7.5	2.32	4.6	17 31.5	8 20.1	+ 0 41.7	-0.5391	0.5372	0.2110	+14	-65
π^1 Cancri	6.3	+2.31	- 5.5	+15 24.6	11 12.7	+ 3 28.5	+1.0592	0.5367	-0.2156	+90	+22
π^2 Cancri	6.0	2.33	5.7	15 22.0	12 33.7	+ 4 47.0	+0.8097	0.5365	0.2177	+90	+ 6
7 Leonis	6.3	2.43	7.3	14 50.2	22 15.8	- 9 50.1	-0.8218	0.5351	0.2320	- 1	-75
11 Leonis	6.8	2.43	7.5	14 48.6	23 16.4	- 8 51.5	-1.0282	0.5350	0.2334	-15	-75
18 Leonis	6.0	2.45	8.7	12 16.9	19 3 14.6	- 5 1.1	+0.6503	0.5346	0.2386	+87	- 5
19 Leonis	7.0	+2.44	- 8.8	+12 2.5	3 44.4	- 4 32.3	+0.7791	0.5345	-0.2392	+90	+ 2
21 Leonis	6.8	2.45	8.9	12 19.2	5 20.1	- 2 59.7	+0.1080	0.5344	0.2412	+48	-33
23 Leonis	6.3	2.47	8.6	13 32.7	5 25.2	- 2 54.8	-1.1752	0.5344	0.2414	-25	-76
A Leonis	4.7	2.50	10.4	10 30.0	13 25.8	+ 4 50.2	-0.0115	0.5341	0.2507	+42	-41
44 Leonis	6.0	2.55	11.6	9 18.3	21 38.3	-11 13.3	-0.8801	0.5343	0.2589	- 4	-81
48 Leonis	5.5	+2.56	-12.5	+ 7 28.8	18 2 10.1	- 6 50.3	-0.2024	0.5346	-0.2633	+38	-53

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

APRIL.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1897.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x	y	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
35 ¹ Sextantis	6.2	+2.54	-13.7	+ 5 17.0	18 6 12.3	- 2 56.1	+0.9604	0.5350	0.2660	+90	+10
37 Sextantis	6.3	2.56	13.4	6 54.7	7 38.1	- 1 41.0	-1.0355	0.5353	0.2670	-14	-83
d Leonis	5.3	2.58	14.6	4 10.0	14 18.9	+ 4 54.7	-0.0916	0.5364	0.2711	+38	-47
p ² Leonis	6.2	2.57	15.3	2 30.6	17 19.0	+ 7 48.8	+0.7602	0.5370	0.2726	+90	- 3
75 Leonis	5.7	2.61	15.7	2 34.3	22 8.7	-11 31.0	-0.6236	0.5382	0.2746	+11	-83
76 Leonis	6.3	+2.61	-15.8	+ 2 12.6	22 54.5	-10 46.7	-0.4714	0.5385	-0.2749	+19	-71
79 Leonis	6.0	2.63	16.0	+ 1 58.1	14 1 17.5	- 8 28.6	-0.8824	0.5391	0.2756	- 4	-88
v Leonis	4.4	2.65	17.0	- 0 15.6	7 16.4	- 2 41.6	-0.3043	0.5412	0.2768	+27	-60
q Virginis	5.7	2.75	19.4	8 53.4	15 8 56.6	- 1 53.9	+1.1870	0.5536	0.2705	+81	+24
x Virginis	5.2	2.77	19.4	7 26.1	11 21.1	+ 0 25.6	-0.8974	0.5550	0.2689	- 6	-90
ψ Virginis	5.2	+2.80	-19.6	- 8 59.1	17 55.3	+ 6 45.7	-1.1188	0.5592	-0.2636	-22	-90
75 Virginis	6.0	2.87	19.9	14 50.3	16 10 12.0	- 1 33.3	+0.4791	0.5706	0.2444	+64	-18
83 Virginis	6.0	2.90	19.6	15 40.0	14 59.2	+ 3 2.2	+0.1367	0.5741	0.2371	+44	-36
85 Virginis	6.5	2.90	19.6	15 15.3	15 26.1	+ 3 29.0	-0.3717	0.5753	0.2364	+17	-65
B. A. C. 4722	5.8	2.95	18.9	17 43.5	17 3 25.6	- 8 59.2	-0.6662	0.5834	0.2145	- 1	-90
42 Libræ	5.7	+3.06	-15.0	-23 29.2	18 11 47.4	- 1 56.6	-0.7229	0.6034	-0.1327	-12	-90
b Scorpii	5.3	3.08	14.2	25 26.5	15 42.6	+ 1 48.7	+0.7022	0.6050	0.1209	+64	- 3
A ² Scorpii	5.2	3.07	14.1	25 1.4	16 41.2	+ 2 44.8	+0.1736	0.6054	0.1180	+33	-33
B. A. C. 5253	5.8	3.06	14.3	24 13.8	16 48.3	+ 2 51.7	-0.6215	0.6054	0.1176	- 8	-90
B. A. C. 5254	5.8	3.05	14.3	23 40.5	16 49.4	+ 2 52.7	-1.1700	0.6054	0.1174	-45	-90
3 Scorpii	6.7	+3.07	-14.0	-24 56.5	17 4.4	+ 3 7.0	+0.0479	0.6055	-0.1168	+27	-40
4 Scorpii	6.3	3.08	13.8	25 58.0	17 22.1	+ 3 24.0	+1.0220	0.6056	0.1159	+64	+19
π Scorpii	3.4	3.08	13.7	25 49.3	18 36.2	+ 4 35.0	+0.7388	0.6060	0.1123	+63	- 1
B. A. C. 5314	5.7	3.07	13.4	25 34.9	20 15.3	+ 6 9.8	+0.3219	0.6066	0.1069	+41	-25
B. A. C. 5347	6.0	3.08	13.0	26 3.2	21 59.5	+ 7 49.6	+0.6063	0.6070	0.1015	+58	- 9
σ Scorpii	3.4	+3.05	-12.5	-25 20.9	19 2 46.7	-11 35.5	-0.5379	0.6080	-0.0863	- 6	-80
α Scorpii	1.2	3.05	11.8	26 12.4	5 45.6	- 8 44.4	+0.0669	0.6084	0.0766	+24	-39
22 Scorpii	5.5	3.03	12.1	24 53.5	6 4.3	- 8 26.4	-1.2574	0.6084	0.0756	-59	-90
25 Scorpii	7.0	3.01	10.9	25 20.6	12 7.4	- 2 39.0	-1.2107	0.6086	0.0559	-54	-90
B. A. C. 5800	7.5	2.98	8.8	26 51.8	22 4.3	+ 6 52.3	-0.0939	0.6076	0.0229	+11	-48
A Ophiuchi	4.9	+2.96	- 9.1	-26 27.2	22 30.5	+ 7 17.4	-0.5124	0.6073	-0.0214	-11	-78
B. A. C. 5813	6.8	2.96	9.1	26 24.0	22 49.7	+ 7 35.8	-0.5718	0.6072	0.0204	-14	-84
38 Ophiuchi	6.7	2.96	8.7	26 31.1	23 19.6	+ 8 4.3	-0.4645	0.6071	0.0187	- 9	-74
43 Ophiuchi	5.8	2.97	7.9	28 2.7	20 1 23.2	+10 2.7	+1.0278	0.6065	-0.0119	+62	+21
3 Sagittarii	4.6	2.99	6.4	27 47.6	10 18.2	- 5 25.0	+0.8038	0.6031	+0.0171	+62	+ 4
B. A. C. 6194	5.1	+2.78	- 4.4	-27 4.8	21 43.6	+ 5 31.8	+0.4921	0.5965	+0.0530	+47	-15
α Sagittarii	2.9	2.71	4.3	25 28.8	21 1 31.9	+ 9 10.7	-0.9031	0.5938	0.0644	-29	-90
B. A. C. 6369	6.2	2.63	3.1	25 6.9	8 1.8	- 8 35.3	-0.7967	0.5888	0.0833	-21	-90
λ Sagittarii	2.3	2.60	2.0	26 25.5	12 5.0	- 4 41.8	+0.8980	0.5855	0.0946	+64	+10
ψ Sagittarii	5.4	2.49	1.1	25 26.1	20 10.0	+ 3 4.2	+0.7424	0.5783	0.1160	+65	- 1
χ ¹ Sagittarii	5.4	+2.43	- 0.7	-24 42.5	22 0 7.5	+ 6 52.6	+0.4774	0.5746	+0.1258	+52	-16
χ ² Sagittarii	6.3	2.43	0.7	24 36.9	0 10.2	+ 6 55.2	+0.3877	0.5746	0.1260	+47	-21
χ ³ Sagittarii	5.6	2.42	- 0.8	24 9.9	0 13.7	+ 6 58.5	-0.0675	0.5745	0.1261	+22	-47
53 Sagittarii	6.7	2.33	0.1	23 39.7	6 8.5	-11 20.0	+0.2032	0.5672	0.1397	+38	-32
B. A. C. 6727	6.2	2.33	0.0	23 39.9	6 15.9	-11 12.9	+0.2230	0.5671	0.1400	+39	-31
4 Capricorni	6.1	+2.10	+ 1.7	-22 7.7	22 31.4	+ 4 27.2	+1.2032	0.5529	+0.1740	+68	+33
o Capricorni	6.2	1.99	1.3	18 55.4	23 3 15.5	+ 9 36.1	-1.1849	0.5478	0.1835	-38	-90
v Capricorni	5.7	1.91	1.4	18 30.0	8 27.7	- 9 57.1	-0.7669	0.5435	0.1912	- 7	-90
19 Capricorni	6.1	1.83	2.3	18 18.8	15 16.2	- 3 22.3	+0.3717	0.5372	0.2015	+54	-23
21 Capricorni	6.4	1.79	2.6	17 55.9	18 7.2	- 0 36.9	+0.5511	0.5348	0.2055	+66	-13
θ Capricorni	4.1	+1.76	+ 2.8	-17 38.5	20 31.4	+ 1 42.6	+0.7441	0.5326	+0.2087	+71	- 3
29 Capricorni	5.7	1.68	2.6	15 35.9	24 1 14.7	+ 6 16.8	-0.4148	0.5286	0.2146	+15	-68
42 Capricorni	5.6	1.53	3.5	14 30.3	13 56.6	- 5 25.1	+1.2426	0.5190	0.2282	+75	+32
50 Capricorni	6.9	1.47	2.9	12 10.1	16 33.1	- 2 53.4	-0.6507	0.5159	0.2306	+ 5	-87
d Aquarii	6.8	1.34	3.7	11 19.6	25 4 45.6	+ 8 57.3	+1.3231	0.5095	0.2399	+79	+40
θ Aquarii	4.4	+1.28	+ 3.1	- 8 17.7	8 4.3	-11 49.9	-1.1359	0.5076	+0.2419	-23	-90

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

APRIL.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1897.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	γ	α'	γ'	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
B. A. C. 7774	6.4	+1.29	+3.5	- 9 33.2	25 8 5.4	-11 48.8	+0.2206	0.5076	+0.2419	+53	-30
ρ Aquarii	5.6	1.26	3.3	8 20.2	9 50.6	-10 6.7	-0.6620	0.5066	0.2429	+ 7	-87
B. A. C. 7951	6.7	1.08	3.4	4 45.7	26 0 36.2	+ 4 13.6	-0.8918	0.5002	0.2493	- 5	-90
B. A. C. 7986	5.9	1.06	3.9	5 32.1	4 33.6	+ 8 4.3	-0.9348	0.4988	0.2503	+84	+ 7
B. A. C. 7993	6.6	1.05	3.9	- 5 21.6	5 42.3	+ 9 11.0	+1.0313	0.4984	0.2506	+85	+13
9 Piscium	6.6	+0.87	+3.4	+ 0 33.4	22 9.2	+ 1 10.6	-1.2735	0.4947	+0.2522	-33	-89
12 Piscium	6.8	0.88	4.0	- 1 36.1	23 23.8	+ 2 23.2	+1.4015	0.4945	0.2521	+88	+50
15 Piscium	6.6	0.83	3.6	+ 0 44.7	27 2 42.3	+ 5 36.3	-0.3327	0.4941	0.2518	+23	-64
16 Piscium	5.8	0.82	3.6	1 31.9	3 13.0	+ 6 6.2	-1.0643	0.4940	0.2518	-16	-88
λ Piscium	4.5	0.80	3.7	1 12.8	6 21.1	+ 9 9.1	+0.0714	0.4938	0.2514	+47	-39
19 Piscium	4.9	+0.77	+3.5	+ 2 55.0	8 45.5	+11 29.6	-1.1896	0.4936	+0.2510	-25	-87
22 Piscium	5.0	0.76	3.8	2 21.5	11 50.7	- 9 30.3	+0.1951	0.4936	0.2504	+54	-32
25 Piscium	6.4	0.77	4.0	2 31.1	12 27.8	- 8 54.2	+1.2716	0.4935	0.2502	+90	+32
45 Piscium	6.9	0.62	4.0	7 7.4	28 6 32.3	+ 8 40.7	-0.4218	0.4949	0.2435	+21	-66
51 Piscium	5.8	0.61	4.4	6 23.3	10 14.2	-11 43.5	+1.2865	0.4954	0.2416	+90	+36
75 Piscium	6.0	+0.49	+4.5	+12 24.3	29 4 53.4	+ 6 24.8	-0.9733	0.4999	+0.2286	-10	-78
η Piscium	3.7	0.44	4.9	14 49.0	18 14.4	- 4 36.9	-0.6772	0.5049	0.2160	+ 7	-75
101 Piscium	6.3	0.44	5.1	14 8.2	20 31.4	- 2 23.8	+0.5680	0.5059	0.2136	+80	- 8
105 Piscium	6.3	+0.43	+5.1	+15 53.1	22 34.1	- 0 24.6	-0.9382	0.5069	+0.2103	- 9	-74

MAY.

23 Tauri	4.7	+0.51	+7.3	+23 37.8	2 13 31.9	-11 22.6	+0.9089	0.5368	+0.1108	+90	+24
η Tauri	3.1	0.52	7.3	23 47.3	14 4.4	-10 51.2	+0.7916	0.5370	0.1097	+90	+17
27 Tauri	4.0	+0.52	+7.3	+23 44.4	14 51.8	-10 5.3	+0.9342	0.5374	+0.1081	+90	+26
28 Tauri	6.2	0.52	7.3	23 49.4	14 52.3	-10 4.9	+0.8392	0.5374	0.1081	+90	+20
B. A. C. 1192	6.0	0.52	7.5	25 16.2	15 22.2	- 9 35.9	-0.7150	0.5376	0.1070	+ 2	-65
ρ Tauri	6.0	0.57	7.7	26 12.8	3 0 54.3	- 0 22.8	-0.8401	0.5415	0.0866	- 6	-64
χ Tauri	5.7	0.62	7.6	25 23.3	6 19.8	+ 4 51.9	+0.5142	0.5434	+0.0745	+78	+ 5
125 Tauri	6.0	+0.95	+7.0	+25 50.5	4 17 8.1	- 9 31.1	+1.1801	0.5504	-0.0081	+90	+55
136 Tauri	5.3	1.01	7.2	27 35.4	23 9.9	- 3 41.8	-0.8430	0.5517	0.0229	- 7	-62
139 Tauri	5.3	1.03	6.7	25 56.6	5 1 17.1	- 1 39.0	+0.9187	0.5505	0.0280	+90	+33
ϵ Geminorum	3.2	1.26	5.2	25 14.1	21 51.6	- 5 47.1	+0.6036	0.5484	0.0756	+87	+10
37 Geminorum	6.3	1.32	5.0	25 30.3	6 2 58.5	- 0 51.0	-0.1192	0.5477	0.0892	+36	-29
39 Geminorum	6.3	+1.34	+5.1	+26 13.0	4 32.2	+ 0 39.8	-1.0382	0.5471	-0.0928	-21	-64
40 Geminorum	6.3	1.35	5.0	26 3.3	4 50.2	+ 0 57.2	-0.8889	0.5470	0.0935	-10	-64
ω Geminorum	5.7	1.35	4.4	24 21.8	6 12.3	+ 2 16.5	+0.8267	0.5467	0.0966	+90	+21
48 Geminorum	6.0	1.40	4.1	24 18.1	10 45.0	+ 6 39.9	+0.4296	0.5456	0.1069	+71	- 2
B. A. C. 2363	7.3	1.41	4.2	24 53.2	11 38.7	+ 7 31.7	-0.3090	0.5453	0.1089	+26	-41
52 Geminorum	6.3	+1.42	+4.2	+25 3.9	11 45.4	+ 7 38.2	-0.5002	0.5453	-0.1091	+15	-52
A Geminorum	5.7	1.46	3.9	25 15.0	15 45.2	+11 29.9	-1.1624	0.5442	0.1179	-32	-65
82 Geminorum	6.3	1.58	2.4	23 23.8	7 3 17.7	- 1 21.0	-0.6534	0.5409	0.1423	+ 6	-64
MARS				22 59.0	4 34.7	- 0 6.5	-0.3922	0.5163	0.1401	+21	-50
84 Geminorum	6.8	1.60	1.9	22 36.0	5 22.2	+ 0 39.4	-0.0978	0.5402	0.1466	+37	-34
7 Cancri	6.3	+1.65	+1.3	+22 21.6	10 24.0	+ 5 31.1	-0.5950	0.5386	-0.1566	+10	-63
μ Cancri	5.7	1.67	+1.0	21 52.9	12 13.9	+ 7 17.4	-0.3688	0.5381	0.1601	+23	-50
B. A. C. 2788	6.0	1.72	-0.1	21 4.3	18 7.8	-11 0.3	-0.4759	0.5365	0.1713	+17	-57
η Cancri	5.4	1.79	0.7	20 47.4	23 57.7	- 5 22.0	-1.2009	0.5344	0.1817	-32	-69
35 Cancri	6.3	1.79	0.8	19 56.6	8 1 12.7	- 4 9.4	-0.5231	0.5341	0.1839	+14	-61
B. A. C. 2899	7.2	+1.80	-1.4	+19 37.6	2 22.2	- 3 2.2	-0.3974	0.5337	-0.1859	+21	-54
38 Cancri	7.0	1.82	1.2	20 8.5	3 17.2	- 2 9.0	-1.1181	0.5335	0.1876	-24	-70
B. A. C. 2914	7.2	1.82	1.3	19 54.2	3 21.2	- 2 5.0	-0.8762	0.5334	0.1876	- 6	-70
B. A. C. 2919	7.3	1.82	1.3	20 2.0	3 36.0	- 1 50.8	-1.0612	0.5334	0.1880	-19	-70
ϵ Cancri	7.2	1.82	1.3	19 54.5	3 38.4	- 1 48.4	-0.9360	0.5334	0.1881	-10	-70
ϵ Cancri	7.1	+1.82	-1.3	+20 5.0	3 46.0	- 1 41.1	-1.1467	0.5334	-0.1883	-26	-70

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MAY.

THE STAR'S				AT CONJUNCTION IN R. A.						Limiting Parallels.	
Name.	Mag.	Red'ns from 1897.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		α	δ	α	d h m	h m				α	δ
δ Cancri	4.0	+1.82	- 2.1	+18 31.9	8 5 40.3	+ 0 9.5	+0.1476	0.5315	-0.1915	+51	-26
68 Cancri	7.5	1.90	3.2	17 29.0	13 49.3	+ 8 2.8	-0.3515	0.5306	0.2041	+24	-54
π^1 Cancri	6.3	1.92	4.4	15 24.6	18 57.1	-10 59.4	+0.7773	0.5293	0.2123	+90	+ 5
π^2 Cancri	6.0	1.94	4.6	15 22.1	20 20.5	- 9 38.6	+0.5247	0.5290	0.2142	+76	- 9
7 Leonis	6.3	2.05	6.0	14 50.2	9 6 20.1	+ 0 1.9	-1.1256	0.5271	0.2279	-22	-75
11 Leonis	6.8	+2.07	- 6.1	+14 48.7	7 22.5	+ 1 2.4	-1.3352	0.5270	-0.2287	-45	-75
18 Leonis	6.0	2.09	7.4	12 16.9	11 28.1	+ 5 0.3	+0.3706	0.5264	0.2342	+65	-20
19 Leonis	7.0	2.08	7.5	12 2.6	11 58.8	+ 5 30.0	+0.5015	0.5263	0.2348	+74	-14
21 Leonis	6.8	2.10	7.6	12 19.3	13 37.5	+ 7 5.5	-0.1782	0.5263	0.2367	+33	-49
A Leonis	4.7	2.17	9.0	10 30.0	21 58.6	- 8 49.1	-0.2918	0.5256	0.2457	+28	-56
44 Leonis	6.0	+2.24	-10.2	+ 9 18.3	10 6 27.0	- 0 36.7	-1.1640	0.5256	-0.2535	-24	-81
48 Leonis	5.5	2.26	11.2	7 28.8	11 7.6	+ 3 55.0	-0.4706	0.5259	0.2573	+18	-69
35 ¹ Sextantis	6.2	2.26	12.6	5 17.0	15 17.5	+ 7 57.0	+0.7153	0.5263	0.2602	+90	- 5
d Leonis	5.3	2.33	13.6	4 10.0	23 39.3	- 7 57.0	-0.3382	0.5278	0.2650	+25	-61
p ² Leonis	6.2	2.34	14.4	2 30.6	11 2 45.0	- 4 57.1	+0.5311	0.5285	0.2666	+75	-15
75 Leonis	5.7	+2.39	-14.7	+ 2 35.3	7 43.6	- 0 8.1	-0.8634	0.5299	-0.2686	- 3	-87
76 Leonis	6.3	2.39	14.9	2 12.7	8 30.8	+ 0 37.6	-0.7055	0.5302	0.2688	+ 6	-88
79 Leonis	6.0	2.41	15.1	+ 1 58.1	10 58.0	+ 3 0.0	-1.1276	0.5310	0.2695	-20	-88
v Leonis	4.4	2.44	16.3	- 0 15.6	17 7.3	+ 8 57.4	-0.5203	0.5332	0.2707	+16	-74
q Virginis	5.7	2.65	19.6	8 53.4	12 19 25.3	+10 22.9	+1.0515	0.5476	0.2651	+81	+15
x Virginis	5.2	+2.69	-19.5	- 7 26.1	21 52.6	-11 14.8	-1.0461	0.5495	-0.2636	-16	-90
ψ Virginis	5.2	2.76	19.9	8 59.1	18 4 33.9	- 4 47.6	-1.2495	0.5543	0.2587	-34	-90
75 Virginis	6.0	2.94	20.8	14 50.3	21 3.6	-12 53.5	+0.4076	0.5701	0.2405	+59	-21
83 Virginis	6.0	3.01	20.8	15 40.0	14 1 53.3	- 8 14.5	-0.0775	0.5720	0.2334	+41	-39
85 Virginis	6.5	3.01	20.7	15 15.3	2 20.5	- 7 48.3	-0.4324	0.5722	0.2327	+14	-69
B. A. C. 4722	5.8	+3.17	-20.3	-17 43.6	14 23.3	+ 3 46.8	-0.6384	0.5831	-0.2115	- 2	-90
42 Libræ	5.7	3.50	16.6	23 29.3	15 22 34.3	+10 38.5	-0.6539	0.6081	0.1311	- 9	-90
b Scorp ⁱⁱ	5.3	3.55	15.9	25 26.6	16 2 26.3	- 9 39.4	+0.7726	0.6103	0.1194	+65	+ 2
A ² Scorp ⁱⁱ	5.2	3.55	15.8	25 1.4	3 24.0	- 8 44.1	+0.2496	0.6107	0.1164	+37	+29
B. A. C. 5253	5.8	3.54	15.8	24 13.8	3 30.9	- 8 37.5	-0.5397	0.6108	0.1160	- 4	-80
B. A. C. 5254	5.8	+3.53	-15.8	-23 40.5	3 32.0	- 8 36.5	-1.0837	0.6108	-0.1160	-37	-90
3 Scorp ⁱⁱ	6.7	3.55	15.7	24 56.5	3 46.8	- 8 22.4	+0.1259	0.6110	0.1151	+31	-36
4 Scorp ⁱⁱ	6.3	3.55	15.6	25 58.0	4 4.3	- 8 5.6	+1.0939	0.6111	0.1145	+64	+26
π Scorp ⁱⁱ	3.4	3.58	15.4	25 49.3	5 17.1	- 6 55.9	+0.8161	0.6117	0.1105	+64	+ 4
B. A. C. 5314	5.7	3.58	15.2	25 34.9	6 54.7	- 5 22.6	+0.4058	0.6124	0.1054	+45	-20
B. A. C. 5347	6.0	+3.60	-14.7	-26 3.2	8 37.2	3 44.5	+0.6921	0.6131	-0.0999	+63	- 3
σ Scorp ⁱⁱ	3.4	3.60	13.9	25 21.0	13 19.3	+ 0 45.3	-0.4315	0.6142	0.0847	+ 1	-71
a Scorp ⁱⁱ	1.2	3.63	13.2	26 12.4	16 14.8	+ 3 33.1	+0.1755	0.6156	0.0750	+30	-33
22 Scorp ⁱⁱ	5.5	3.61	13.3	24 53.5	16 33.1	+ 3 50.6	-1.1363	0.6156	0.0739	-46	-90
25 Scorp ⁱⁱ	7.0	3.63	11.8	25 20.6	22 28.7	+ 9 30.6	-1.6750	0.6165	0.0541	-42	-90
B. A. C. 5800	7.5	+3.67	- 9.5	-26 51.8	17 8 11.8	- 5 12.1	+0.0527	0.6163	-0.0210	+19	-40
A Ophiuchi	4.9	3.65	9.9	26 27.2	8 37.3	- 4 47.7	-0.3599	0.6162	0.0196	- 3	-66
B. A. C. 5813	6.8	3.65	9.9	26 24.1	8 56.0	- 4 29.8	-0.4180	0.6162	0.0185	- 6	-70
38 Ophiuchi	6.7	3.66	9.3	26 31.1	9 25.2	- 4 2.0	+0.3103	0.6161	0.0168	0	-62
43 Ophiuchi	5.8	3.70	8.6	28 2.7	11 25.7	- 2 6.7	+1.1680	0.6156	-0.0100	+62	+36
3 Sagittarii	4-6	+3.66	- 6.5	-27 47.6	20 6.5	+ 6 11.3	+0.9641	0.6129	+0.0194	+62	+16
B. A. C. 6194	5.1	3.60	3.9	27 4.8	18 7 12.6	- 7 11.2	+0.6787	0.6068	0.0569	+60	- 4
λ Sagittarii	2.9	3.54	3.5	25 28.8	10 54.1	- 3 39.1	-0.6900	0.6041	0.0672	-17	-90
B. A. C. 6369	6.2	3.48	1.9	25 6.9	17 12.3	+ 2 23.2	-0.5730	0.5993	0.0863	- 8	-84
σ Sagittarii	2.3	3.48	- 0.7	26 25.5	21 8.1	+ 6 9.3	+1.1034	0.5958	0.0978	+64	+27
ϕ Sagittarii	5.4	+3.38	+ 0.8	-25 26.0	19 4 58.3	-10 19.6	+0.0634	0.5886	+0.1194	+65	+16
χ^1 Sagittarii	5.4	3.33	1.4	24 42.5	8 48.5	- 6 38.6	+0.7097	0.5848	0.1293	+65	- 3
χ^2 Sagittarii	6.3	3.32	1.4	24 36.8	8 51.1	- 6 36.0	+0.6203	0.5847	0.1294	+61	- 8
χ^3 Sagittarii	5.6	3.31	1.3	24 9.8	8 54.5	- 6 32.8	+0.1722	0.5847	0.1295	+35	-33
53 Sagittarii	6.7	3.22	2.5	23 39.7	14 38.5	- 1 2.2	+0.4484	0.5788	0.1436	+52	-18
B. A. C. 6727	6.2	+3.22	+ 2.5	-23 39.8	14 45.6	- 0 55.4	+0.4679	0.5787	+0.1439	+53	-17

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MAY.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1897.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	<i>Y</i>	<i>z'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
o Capricorni	6.2	+2.88	+5.0	-18 55.4	20 11 42.9	- 4 44.8	-0.8930	0.5565	+0.1871	-15	-90
v Capricorni	5.7	2.81	5.6	18 30.0	16 11.3	- 0 25.8	-0.4778	0.5518	0.1946	+ 9	-73
19 Capricorni	6.1	2.72	6.5	18 18.7	22 48.8	+ 5 57.9	+0.6515	0.5451	0.2048	+70	- 8
21 Capricorni	6.4	2.68	6.8	17 55.8	21 1 35.4	+ 8 39.0	+0.8310	0.5423	0.2087	+72	+ 3
θ Capricorni	4.1	2.65	7.0	17 38.4	3 55.9	+10 54.7	+1.0230	0.5400	0.2118	+72	+15
29 Capricorni	5.7	+2.56	+7.0	-15 35.8	8 32.1	- 8 38.1	-0.1176	0.5356	+0.2176	+30	-49
50 Capricorni	6.9	2.32	7.6	12 10.1	23 29.7	+ 5 50.9	-0.3457	0.5226	0.2327	+21	-63
θ Aquarii	4.4	2.10	8.0	8 17.6	22 14 43.4	- 3 23.3	-0.8272	0.5117	0.2432	- 3	-90
B. A. C. 7774	6.4	2.12	8.4	9 33.1	14 44.5	- 3 22.2	+0.5160	0.5117	0.2432	+71	-16
ρ Aquarii	5.6	2.08	8.2	8 20.2	16 27.9	- 1 41.9	-0.3590	0.5110	0.2443	+22	-63
B. A. C. 7951	6.7	+1.88	+8.0	- 4 45.7	23 7 0.6	-11 34.4	-0.5953	0.5032	+0.2498	+11	-81
B. A. C. 7986	5.9	1.85	8.8	5 32.0	10 55.0	- 7 46.7	+1.2148	0.5012	0.2505	+84	+27
B. A. C. 7993	6.6	1.84	8.9	- 5 21.5	12 3.0	- 6 40.7	+1.3102	0.5008	0.2507	+85	+37
9 Piscium	6.6	1.63	8.0	+ 0 33.5	24 4 20.4	+ 9 9.3	-0.9970	0.4958	0.2514	-10	-89
15 Piscium	6.6	1.58	8.1	0 44.8	8 51.7	-10 26.8	-0.0665	0.4950	0.2509	+39	-40
16 Piscium	5.8	+1.57	+7.9	+ 1 32.0	9 22.3	- 9 57.1	-0.7950	0.4949	+0.2508	+ 1	-88
λ Piscium	4.5	1.54	8.2	1 12.9	12 29.0	- 6 55.5	+0.3333	0.4945	0.2503	+62	-25
19 Piscium	4.9	1.51	7.8	2 55.0	14 52.5	- 4 36.0	-0.9288	0.4942	0.2498	- 7	-87
22 Piscium	5.0	1.49	8.2	2 21.6	17 56.8	- 1 36.8	+0.4457	0.4940	0.2490	+69	-20
45 Piscium	6.9	1.31	7.8	7 7.4	25 12 34.5	- 7 29.6	-0.2007	0.4945	0.2415	+32	-52
75 Piscium	6.0	+1.11	+7.3	+12 24.4	26 10 54.3	- 9 46.9	-0.7965	0.4999	+0.2261	0	-66
7 Piscium	3.7	1.03	7.2	14 49.0	27 0 15.5	+ 3 11.5	-0.5300	0.5040	0.2135	+15	-67
101 Piscium	6.3	1.02	7.4	14 8.2	2 32.5	+ 5 24.6	+0.7090	0.5050	0.2111	+90	0
103 Piscium	6.8	1.00	7.1	16 6.3	4 21.9	+ 7 10.9	-1.0913	0.5057	0.2091	-20	-74
105 Piscium	6.3	1.00	7.1	15 53.1	4 35.2	+ 7 23.9	-0.8011	0.5060	0.2089	- 1	-74
3 Arietis	6.0	+0.98	+7.0	+16 53.9	8 12.8	+10 55.1	-1.1762	0.5074	+0.2048	-27	-73
4 Arietis	5.7	0.97	7.1	16 26.7	9 3.3	+11 44.2	-0.5011	0.5078	0.2038	+16	-64
5 Arietis	5.7	0.95	7.1	17 19.0	13 50.0	- 7 37.4	-0.5088	0.5100	0.1980	+15	-64
15 Arietis	5.7	0.91	7.0	19 1.0	20 40.0	- 0 59.5	-1.0749	0.5132	0.1891	-20	-71
B. A. C. 686	7.2	0.91	7.0	19 8.0	22 19.5	+ 0 37.1	-0.8941	0.5132	0.1869	- 7	-71
θ Arietis	5.7	+0.90	+6.9	+19 25.6	28 0 30.0	+ 2 43.7	-0.8163	0.5153	+0.1838	- 2	-71
23 Arietis	7.5	0.89	7.0	19 13.1	1 1.3	+ 3 14.1	-0.4892	0.5155	0.1831	+16	-60
26 Arietis	6.0	0.88	7.1	19 24.0	6 49.9	+ 8 52.1	+0.3479	0.5186	0.1745	+64	-14
v Arietis	5.7	0.86	6.9	21 31.0	10 54.3	-11 10.9	-1.3088	0.5197	0.1683	-49	-68
μ Arietis	6.0	0.87	7.2	19 34.5	12 42.0	- 9 26.5	+1.1511	0.5217	0.1654	+90	+36
ε Arietis	4.6	+0.84	+7.2	+20 55.8	20 59.6	- 1 24.3	+0.9587	0.5262	+0.1516	+90	+23
64 Arietis	5.7	+0.81	+6.9	+24 21.7	29 9 4.2	+10 17.4	-1.1570	0.5326	+0.1295	+31	-66

JUNE.

136 Tauri	5.3	+0.99	+6.0	+27 35.4	1 4 55.6	+ 3 51.3	-0.9644	0.5529	-0.0248	-16	-62
139 Tauri	5.3	1.02	5.8	25 56.6	7 2.3	+ 5 53.7	+0.7943	0.5529	0.0300	+90	+25
ε Geminorum	3.2	1.16	4.7	25 14.1	2 3 33.1	+ 1 41.8	+0.4403	0.5504	0.0791	+72	+ 1
37 Geminorum	6.3	1.20	4.4	25 30.3	8 39.8	+ 6 37.9	-0.2919	0.5492	0.0911	+26	-38
39 Geminorum	6.3	+1.21	+4.4	+26 13.0	10 13.5	+ 8 8.5	-1.2147	0.5488	-0.0947	-40	-64
40 Geminorum	6.3	1.22	4.3	26 3.3	10 31.4	+ 8 25.7	-1.0661	0.5487	0.0954	-23	-64
ω Geminorum	5.7	1.22	4.0	24 21.8	11 53.4	+ 9 45.0	+0.6497	0.5484	0.0985	+90	+10
48 Geminorum	6.0	1.25	3.6	24 18.1	16 26.1	- 9 51.7	+0.2451	0.5470	0.1087	+57	-12
52 Geminorum	6.3	1.27	3.7	25 3.9	17 26.5	- 8 53.3	-0.6970	0.5468	0.1109	+ 3	-64
58 Geminorum	6.3	+1.29	+3.1	+23 8.7	21 28.7	- 4 59.4	+0.9289	0.5455	-0.1198	+90	+25
82 Geminorum	6.3	1.38	2.2	23 23.8	8 9 0.4	+ 6 9.4	-0.8657	0.5414	0.1438	- 7	-67
84 Geminorum	6.8	1.39	1.8	22 36.0	11 5.4	+ 8 9.9	-0.3056	0.5406	0.1479	+26	-45
7 Cancrī	6.3	1.43	1.3	22 21.6	16 8.4	-10 57.1	-0.8173	0.5387	0.1578	- 3	-68
μ ² Cancrī	5.7	1.44	1.0	21 52.9	17 58.9	- 9 10.2	-0.5929	0.5380	0.1612	+10	-63
B. A. C. 2788	6.0	+1.48	+0.1	+21 4.4	23 55.1	- 3 25.7	-0.7086	0.5357	-0.1721	+ 4	-69

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JUNE.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels	
Name.	Mag.	Red'ns from 1897.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		s	"	"	d h m	h m				"	"
θ Cancri	5.7	+1.50	-0.8	+18 26.5	4 5 18.2	+1 47.0	+1.1710	0.5337	-0.1815	+90	+36
35 Cancri	6.3	1.53	0.6	19 56.6	7 3.2	+3 28.6	-0.7644	0.5337	0.1845	+1	-70
B. A. C. 2899	7.2	1.54	0.8	19 37.6	8 13.8	+4 36.9	-0.6410	0.5326	0.1865	+8	-68
B. A. C. 2914	7.2	1.55	0.9	19 54.2	9 12.9	+5 34.1	-1.1222	0.5322	0.1881	-24	-70
B. A. C. 2919	7.3	1.55	0.9	20 2.0	9 27.8	+5 48.5	-1.3084	0.5321	0.1885	-46	-70
ϵ Cancri	7.2	+1.55	-0.9	+19 54.5	9 30.3	+5 51.0	-1.1828	0.5321	-0.1885	-30	-70
δ Cancri	4.0	1.56	1.6	18 31.9	11 33.4	+7 50.1	-0.0952	0.5313	0.1919	+37	-39
B. A. C. 3103	7.5	1.64	2.7	17 31.6	21 59.7	-6 3.6	-1.1024	0.5277	0.2077	-22	-72
π Cancri	6.3	1.63	3.5	15 24.6	5 0 59.6	-3 9.4	+0.5275	0.5267	0.2119	+76	-9
π^* Cancri	6.0	1.66	3.7	15 22.1	13 24.2	-1 47.4	+0.2689	0.5262	0.2138	+58	-23
18 Leonis	6.0	+1.78	-6.2	+12 17.0	17 46.9	-10 53.5	+0.1079	0.5222	-0.2327	+49	-33
19 Leonis	7.0	1.77	6.3	12 2.6	18 18.2	-10 23.2	+0.2380	0.5221	0.2333	+56	-27
21 Leonis	6.8	1.79	6.3	12 19.3	19 58.7	-8 45.8	-0.4468	0.5218	0.2351	+19	-64
A Leonis	4.7	1.85	7.7	10 30.0	6 4 30.2	-0 30.0	-0.5644	0.5204	0.2434	+13	-73
43 Leonis	6.5	1.90	9.4	7 3.8	12 4.2	+6 50.1	+1.1780	0.5198	0.2498	+90	+26
48 Leonis	5.5	+1.96	-9.8	+7 28.9	17 57.9	-11 27.0	-0.7459	0.5196	-0.2540	+4	-80
35 ¹ Sextantis	6.2	1.97	11.1	5 17.0	22 14.3	-7 18.5	+0.4564	0.5197	0.2567	+70	-13
α Leonis	5.3	2.05	12.1	4 10.0	7 6 50.0	+1 1.3	-0.6081	0.5205	0.2611	+13	-78
β Leonis	6.2	2.07	12.9	2 30.7	10 1.0	+4 6.4	+0.2754	0.5211	0.2623	+58	-28
75 Leonis	5.7	2.13	13.2	2 34.4	15 8.4	+9 4.3	-1.1356	0.5221	0.2639	-21	-87
76 Leonis	6.3	+2.13	-13.4	+2 12.7	15 56.9	+9 51.3	-0.9753	0.5222	-0.2641	-10	-88
ν Leonis	4.4	2.21	14.9	-0 15.6	8 0 49.3	-5 32.9	-0.7788	0.5249	0.2656	+2	-90
η Virginis	5.7	2.49	18.9	8 53.4	9 3 58.5	-3 16.0	+0.8544	0.5384	0.2592	+81	+3
χ Virginis	5.2	2.53	18.7	7 26.0	6 30.7	-0 48.8	-1.2728	0.5401	0.2579	-35	-90
75 Virginis	6.0	2.85	20.7	14 50.3	10 6 25.6	-1 43.5	+0.2502	0.5590	0.2348	+51	-29
83 Virginis	6.0	+2.94	-20.8	-15 40.0	11 23.7	+3 3.9	-0.0738	0.5634	-0.2285	+32	-47
85 Virginis	6.5	2.94	20.7	15 15.3	11 51.7	+3 30.8	-0.5899	0.5638	0.2272	+6	-82
B. A. C. 4722	5.8	3.14	20.6	17 43.6	11 0 14.1	-8 34.4	-0.8205	0.5754	0.2066	-10	-90
42 Libræ	5.7	3.70	17.5	23 29.3	12 9 3.6	-1 4.0	-0.7055	0.6039	0.1279	-11	-90
δ Scorpii	5.3	3.78	17.1	25 26.6	12 58.7	+2 41.1	+0.7396	0.6066	0.1164	+64	-1
A ² Scorpii	5.2	+3.79	-16.8	-25 1.5	13 57.1	+3 37.1	+0.2158	0.6073	-0.1134	+35	-30
B. A. C. 5253	5.8	3.78	16.7	24 13.8	14 4.1	+3 43.8	-0.5783	0.6073	0.1131	-7	-84
B. A. C. 5254	5.8	3.77	16.6	23 40.5	14 5.3	+3 44.9	-1.1266	0.6073	0.1130	-41	-90
3 Scorpii	6.7	3.79	16.7	24 56.6	14 20.2	+3 59.2	+0.0921	0.6075	0.1123	+29	-37
4 Scorpii	6.3	3.81	16.8	25 58.0	14 37.9	+4 16.1	+1.0668	0.6077	0.1114	+64	+23
π Scorpii	3.4	+3.83	-16.6	-25 49.3	15 51.4	+5 26.5	+0.7897	0.6084	-0.1077	+64	+3
B. A. C. 5314	5.7	3.85	16.2	25 34.9	17 30.1	+7 1.0	+0.3782	0.6094	0.1026	+44	-21
B. A. C. 5347	6.0	3.88	15.8	26 3.2	19 13.6	+8 40.1	+0.6725	0.6103	0.0972	+62	-4
σ Scorpii	3.4	3.92	14.8	25 21.0	23 58.1	-10 47.8	-0.4455	0.6127	0.0821	-2	-72
α Scorpii	1.2	3.96	14.2	26 12.4	18 2 54.8	-7 58.7	+0.1702	0.6139	0.0726	+29	-33
25 Scorpii	7.0	+4.01	-12.5	-25 20.6	9 10.5	-1 59.5	-1.0688	0.6158	-0.0518	-42	-90
31 Ophiuchi	6.7	4.05	11.0	25 30.1	15 32.7	+4 6.0	-1.1768	0.6168	0.0303	-53	-90
B. A. C. 5800	7.5	4.12	10.2	26 51.8	18 54.4	+7 18.8	+0.0828	0.6170	0.0188	+20	-38
A Ophiuchi	4.9	4.10	10.6	26 27.2	19 19.9	+7 43.2	-0.3289	0.6170	0.0174	-2	-63
B. A. C. 5813	6.8	4.10	10.5	26 24.1	19 38.6	+8 1.0	-0.3862	0.6170	0.0163	-5	-68
38 Ophiuchi	6.7	+4.12	-9.9	-26 31.1	20 7.7	+8 28.8	-0.2781	0.6170	-0.0147	+1	-60
43 Ophiuchi	5.8	4.18	9.4	28 2.7	22 8.1	+10 23.9	+1.2048	0.6169	-0.0078	+62	+21
3 Sagittarii	4.6	4.21	6.9	27 47.6	14 6 46.7	-5 20.3	+1.0179	0.6153	+0.0216	+62	+40
B. A. C. 6194	5.1	4.21	3.8	27 4.8	17 47.4	+5 11.7	+0.7549	0.6107	0.0580	+63	+1
λ Sagittarii	2.9	4.16	3.0	25 28.8	21 26.6	+8 41.5	-0.5994	0.6087	0.0697	-11	-87
B. A. C. 6369	6.2	+4.14	-1.1	-25 6.8	15 3 39.9	-9 21.0	-0.4699	0.6045	+0.0890	-3	-78
σ Sagittarii	2.3	4.16	0.0	26 25.5	7 32.5	-5 38.3	+1.2035	0.6015	0.1006	+64	+34
ψ Sagittarii	5.4	4.11	+2.0	25 26.0	15 14.8	+1 45.1	+1.0784	0.5950	0.1224	+65	+24
χ^1 Sagittarii	5.4	4.07	2.9	24 42.5	19 0.9	+5 22.0	+0.8334	0.5915	0.1325	+65	+5
χ^2 Sagittarii	6.3	4.06	2.9	24 36.8	19 3.4	+5 24.4	+0.7451	0.5914	0.1326	+63	0
χ^3 Sagittarii	5.6	+4.05	+2.8	-24 9.8	19 6.7	+5 27.5	+0.3023	0.5914	+0.1328	+42	-26

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JUNE.

THE STAR'S				AT CONJUNCTION IN R. A.						Limiting Parallels.	
Name.	Mag.	Red'ns from 1897.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
53 Sagittarii	6.7	+3.99	+ 4.3	-23 39.7	16 0 43.9	+10 51.3	+0.5847	0.5859	+0.1471	+60	-10
B. A. C. 6727	6.2	3.99	4.3	23 39.8	0 50.9	+10 58.0	+0.6044	0.5858	0.1474	+61	-9
σ Capricorni	5.6	3.76	7.3	19 26.3	16 53.6	+ 2 23.8	-1.0088	0.5692	0.1827	-24	-90
π Capricorni	5.1	3.70	7.8	18 32.8	20 14.7	+ 5 37.5	-1.2933	0.5656	0.1891	-51	-90
θ Capricorni	6.2	3.70	8.1	18 55.3	21 20.0	+ 6 40.4	-0.7059	0.5645	0.1911	- 5	-90
ν Capricorni	5.7	+3.64	+ 9.0	-18 29.9	17 1 41.8	+10 52.7	-0.2882	0.5599	+0.1987	+18	-60
19 Capricorni	6.1	3.57	10.2	18 18.6	8 9.3	- 6 53.6	+0.8376	0.5532	0.2090	+72	+ 3
21 Capricorni	6.4	3.54	10.6	17 55.8	10 51.5	- 4 17.0	+1.0188	0.5504	0.2129	+72	+15
θ Capricorni	4.1	3.51	10.9	17 38.4	13 8.4	- 2 4.8	+1.2112	0.5481	0.2160	+72	+31
29 Capricorni	5.7	3.42	11.2	15 35.8	17 37.4	+ 2 15.1	+0.0922	0.5437	0.2218	+41	-38
50 Capricorni	6.9	+3.20	+12.4	-12 10.0	18 8 11.3	- 7 39.7	-0.1189	0.5303	+0.2368	+33	-49
36 Aquarii	6.3	3.02	12.9	8 41.3	19 20.7	+ 3 8.7	-1.0700	0.5215	0.2449	-19	-90
θ Aquarii	4.4	2.97	13.2	8 17.6	23 1.9	+ 6 43.1	-0.5814	0.5188	0.2470	+11	-80
B. A. C. 7774	6.4	2.98	13.6	9 33.0	23 3.0	+ 6 44.2	+0.7461	0.5188	0.2470	+78	- 4
ρ Aquarii	5.6	2.96	13.4	8 20.1	19 0 43.8	+ 8 21.8	-0.1137	0.5176	0.2478	+35	-49
B. A. C. 7951	6.7	+2.73	+13.6	- 4 45.2	14 55.7	- 1 51.7	-0.3441	0.5090	+0.2528	+24	-62
9 Piscium	6.6	2.48	13.7	+ 0 33.6	20 11 48.8	- 5 34.6	-0.7416	0.5005	0.2535	+ 4	-84
15 Piscium	6.6	2.44	13.7	0 44.9	16 15.1	- 1 15.7	+0.1791	0.4993	0.2527	+52	-34
16 Piscium	5.8	2.43	13.5	1 32.1	16 45.0	- 0 46.7	-0.5433	0.4992	0.2526	+15	-76
λ Piscium	4.5	2.40	13.7	1 13.0	19 48.7	+ 2 11.9	+0.5715	0.4984	0.2518	+78	-13
19 Piscium	4.9	+2.37	+13.3	+ 2 55.1	22 9.8	+ 4 29.0	-0.6771	0.4981	+0.2513	+ 8	-86
22 Piscium	5.0	2.35	13.7	2 21.7	21 1 10.9	+ 7 25.0	+0.6834	0.4976	0.2503	+89	- 7
d Piscium	5.3	2.18	12.7	7 37.3	16 46.6	- 1 25.3	-1.1835	0.4967	0.2435	-25	-83
45 Piscium	6.9	2.16	13.0	7 7.5	19 33.0	+ 1 16.4	+0.0306	0.4967	0.2418	+44	-40
75 Piscium	6.0	1.95	11.8	12 24.4	22 17 40.0	- 1 13.6	-0.5837	0.5005	0.2255	+12	-72
η Piscium	3.7	+1.84	+11.3	+14 49.1	23 6 56.1	+11 39.7	-0.3355	0.5043	+0.2125	+25	-55
101 Piscium	6.3	1.83	11.4	14 8.3	9 12.6	-10 7.7	+0.8944	0.5051	0.2100	+90	+11
103 Piscium	6.8	1.81	10.8	16 6.4	11 1.3	- 8 22.1	-0.9001	0.5058	0.2079	- 7	-74
105 Piscium	6.3	1.81	11.0	15 53.2	11 14.6	- 8 9.2	-0.6114	0.5059	0.2077	+10	-71
3 Arietis	6.0	1.78	10.7	16 54.0	14 51.3	- 4 38.8	-0.9899	0.5073	0.2035	-13	-73
4 Arietis	5.7	+1.78	+11.0	+16 26.8	15 41.6	- 3 49.9	-0.3180	0.5077	+0.2025	+26	-53
ι Arietis	5.7	1.74	10.6	17 19.0	20 27.1	+ 0 47.3	-0.3332	0.5097	0.1966	+25	-53
15 Arietis	5.7	1.70	10.1	19 1.0	24 3 15.9	+ 7 23.9	-0.9060	0.5128	0.1876	- 8	-71
B. A. C. 686	7.2	1.69	10.5	19 8.1	4 55.2	+ 9 0.3	-0.7296	0.5136	0.1853	+ 3	-71
θ Arietis	5.7	1.67	10.0	19 25.6	7 5.4	+11 6.6	-0.6550	0.5147	0.1822	+ 8	-69
23 Arietis	7.5	+1.67	+10.0	+19 13.1	7 36.7	+11 37.0	-0.3295	0.5149	+0.1815	+25	-51
26 Arietis	6.0	1.63	10.2	19 24.1	13 24.4	- 6 45.9	+0.4960	0.5179	0.1729	+75	- 7
ν Arietis	5.7	1.61	9.4	21 31.1	17 28.4	- 2 49.3	-1.1030	0.5200	0.1666	-29	-68
μ Arietis	6.0	1.60	9.8	19 34.5	19 16.0	- 1 5.0	+1.2896	0.5209	0.1643	+90	+51
ϵ Arietis	4.6	1.57	9.4	20 55.9	25 3 32.9	+ 6 56.6	+1.0840	0.5255	0.1499	+90	+32
64 Arietis	5.7	+1.50	+ 8.3	+24 21.7	15 36.5	- 5 22.7	-1.0469	0.5319	+0.1278	-21	-66
7 Tauri	6.0	1.48	8.3	24 7.3	20 25.8	- 0 42.7	-0.1861	0.5344	0.1184	+32	-36
11 Tauri	6.7	1.47	8.1	24 59.9	23 23.9	+ 2 9.5	-0.8167	0.5359	0.1125	- 4	-65
γ Pleiadum	6.3	1.46	8.2	23 58.1	26 1 18.6	+ 4 0.4	+0.5382	0.5369	0.1081	+80	+ 3
17 Tauri	4.3	1.46	8.3	23 47.5	1 20.9	+ 4 2.6	+0.7375	0.5369	0.1085	+90	+14
18 Tauri	6.3	+1.46	+ 8.1	+24 31.1	1 28.2	+ 4 9.7	-0.0550	0.5369	+0.1083	+40	-27
19 Tauri	5.0	1.46	8.2	24 8.8	1 29.8	+ 4 11.2	+0.3603	0.5370	0.1082	+65	- 6
20 Tauri	5.0	1.46	8.2	24 2.9	1 47.3	+ 4 28.2	+0.5007	0.5371	0.1076	+76	+ 1
21 Tauri	7.0	1.46	8.2	24 14.1	1 49.4	+ 4 30.2	+0.2971	0.5371	0.1075	+61	- 9
22 Tauri	7.0	1.46	8.2	24 12.5	1 53.4	+ 4 34.1	+0.3338	0.5371	0.1074	+63	- 7
23 Tauri	4.7	+1.46	+ 8.3	+23 37.8	2 1.8	+ 4 42.2	+0.9905	0.5372	+0.1071	+90	+30
η Tauri	3.1	1.46	8.2	23 47.3	2 34.2	+ 5 13.5	+0.8716	0.5375	0.1060	+90	+22
26 Tauri	7.0	1.45	8.3	23 32.6	3 15.5	+ 5 53.5	+1.2169	0.5378	0.1046	+90	+49
27 Tauri	4.0	1.45	8.2	23 44.4	3 21.3	+ 5 59.2	+1.0075	0.5379	0.1044	+90	+31
28 Tauri	6.2	1.45	8.2	23 49.4	3 21.9	+ 5 59.7	+0.9161	0.5379	0.1043	+90	+24
B. A. C. 1192	6.0	+1.45	+ 7.8	+25 16.2	3 51.7	+ 6 28.5	-0.6358	0.5382	+0.1033	+ 7	-61

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JUNE.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1897.0.		Apparent Declination.	Washington Mean Time.	Hour Angle <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
β Tauri	6.0	+1.42	+ 7.4	+26 12.8	26 13 20.9	- 8 21.2	-0.7964	0.5427	+0.0830	- 3	-64
χ Tauri	5.7	1.41	7.4	25 23.3	18 44.5	- 3 8.4	-0.5336	0.5450	+0.0710	+80	+ 7
125 Tauri	6.0	+1.36	+ 5.7	+25 50.4	28 5 16.1	+ 6 11.8	+1.0728	0.5543	-0.0117	+90	+45
					NEW MOON.						

JULY.

B. A. C. 2788	6.0	+1.47	- 0.2	+21 4.3	1 5 41.0	+ 4 7.6	-0.8033	0.5390	-0.1744	- 2	-69
θ Cancr	5.7	1.47	0.9	18 26.5	11 1.7	+ 9 17.8	+1.0646	0.5368	0.1838	+90	+27
35 Cancr	6.3	1.49	0.8	19 56.6	12 45.8	+10 58.5	-0.8683	0.5361	0.1868	- 6	-70
B. A. C. 2899	7.2	+1.49	- 0.9	+19 37.6	13 55.9	-11 53.7	-0.7467	0.5356	-0.1887	+ 2	-69
δ Cancr	4.0	1.50	1.5	18 31.9	17 14.0	- 8 42.0	-0.2061	0.5343	0.1941	+31	-45
α Cancr	6.0	1.51	2.4	15 58.6	23 26.7	- 2 41.2	+1.2909	0.5319	0.2037	+90	+45
68 Cancr	7.5	1.53	2.3	17 29.1	2 1 25.2	- 0 46.5	-0.7254	0.5311	0.2067	+ 3	-72
B. A. C. 3103	7.5	1.55	2.5	17 31.6	3 36.4	+ 1 20.5	-1.2258	0.5303	0.2098	-33	-72
π Cancr	6.3	+1.53	- 3.0	+15 24.6	6 35.4	+ 4 13.8	+0.3999	0.5291	-0.2140	+67	-15
π^a Cancr	6.0	1.55	3.3	15 22.1	7 59.5	+ 5 35.3	+0.1433	0.5287	0.2148	+51	-29
18 Leonis	6.0	1.61	5.4	12 17.0	23 19.0	- 3 34.0	-0.0353	0.5238	0.2342	+41	-41
19 Leonis	7.0	1.61	5.4	12 2.6	23 50.2	- 3 3.8	+0.0964	0.5236	0.2348	+48	-34
21 Leonis	6.8	1.62	5.5	12 19.3	3 30.7	- 1 26.5	-0.5928	0.5232	0.2365	+12	-73
A Leonis	4.7	+1.66	- 6.7	+10 30.0	10 2.0	+ 6 49.1	-0.7177	0.5212	-0.2445	+ 5	-79
43 Leonis	6.5	1.69	7.8	7 3.8	17 36.9	- 9 49.9	+1.0235	0.5199	0.2504	+90	+15
48 Leonis	5.5	1.73	8.5	7 28.9	23 31.8	- 4 5.8	-0.9091	0.5193	0.2543	- 5	-83
35 ¹ Sextantis	6.2	1.75	9.6	5 17.0	4 3 49.6	+ 0 4.1	+0.2955	0.5190	0.2568	+59	-27
α Leonis	5.3	1.82	10.6	4 10.0	12 29.0	+ 8 27.8	-0.7772	0.5190	0.2606	+ 2	-78
β^a Leonis	6.2	+1.82	-11.3	+ 2 30.7	15 41.8	+11 34.7	+0.1100	0.5192	-0.2617	+49	-37
75 Leonis	5.7	1.89	11.7	2 34.4	20 52.4	- 7 24.3	-1.3114	0.5197	0.2630	-37	-87
76 Leonis	6.3	1.89	11.7	+ 2 12.7	21 41.6	- 6 36.5	-1.1507	0.5198	0.2631	-21	-88
ν Leonis	4.4	1.96	13.3	- 0 15.5	5 6 41.0	+ 2 6.2	-0.9548	0.5213	0.2640	- 8	-90
γ Virginis	5.7	2.23	17.3	8 53.3	6 10 20.9	+ 4 53.9	+0.7019	0.5323	0.2559	+81	- 6
69 Virginis	5.0	+2.59	-19.9	-15 26.7	7 11 5.3	+ 4 48.8	+1.2857	0.5486	-0.2337	+75	+38
75 Virginis	6.0	2.63	19.6	14 50.3	13 30.0	+ 7 8.5	+0.1099	0.5505	0.2306	+43	-36
83 Virginis	6.0	2.72	20.1	15 40.0	18 36.9	-11 55.2	-0.2132	0.5546	0.2238	+25	-55
85 Virginis	6.5	2.72	19.9	15 15.3	19 5.9	-11 27.2	-0.7373	0.5550	0.2230	- 2	-90
87 Virginis	5.8	2.73	20.6	17 21.0	19 52.6	-10 42.2	+1.2069	0.5556	0.2219	+73	+31
89 Virginis	5.4	+2.76	-20.6	-17 37.6	20 56.9	- 9 40.3	+1.2406	0.5566	-0.2203	+72	+35
B. A. C. 4722	5.8	2.95	19.9	17 43.5	8 7 51.2	+ 0 50.4	-0.9587	0.5659	0.2025	-19	-90
42 Libræ	5.7	3.65	17.8	23 29.3	9 17 42.5	+ 9 22.8	-0.8015	0.5945	0.1247	-18	-90
δ Scorpii	5.3	3.75	17.7	25 26.6	21 44.7	-10 44.9	+0.6691	0.5971	0.1133	+62	- 5
A ³ Scorpii	5.2	3.76	17.4	25 1.5	22 44.8	- 9 47.3	+0.1392	0.5978	0.1105	+31	-35
B. A. C. 5253	5.8	+3.75	-17.1	-24 13.8	22 52.1	- 9 40.2	-0.6661	0.5979	-0.1102	-11	-90
B. A. C. 5254	5.8	3.74	17.0	23 40.5	22 53.2	- 9 39.2	-1.2218	0.5979	0.1101	-51	-90
3 Scorpii	6.7	3.77	17.2	24 56.6	23 8.7	- 9 24.4	+0.0139	0.5981	0.1094	+24	-42
4 Scorpii	6.3	3.79	17.5	25 58.0	23 26.8	- 9 7.0	+1.0029	0.5982	0.1085	+64	+18
π Scorpii	3.4	3.81	17.2	25 49.3	10 0 42.5	- 7 54.5	+0.7236	0.5991	0.1048	+64	- 1
B. A. C. 5314	5.7	+3.84	-16.8	-25 34.9	2 24.0	- 6 17.2	+0.3109	0.6001	-0.0998	+39	-25
B. A. C. 5347	6.0	3.88	16.5	26 3.2	4 10.5	- 4 35.1	+0.6083	0.6005	0.0945	+58	- 8
σ Scorpii	3.4	3.95	15.4	25 21.0	9 3.0	+ 0 5.1	-0.5178	0.6039	0.0797	- 6	-78
α Scorpii	1.2	4.02	15.0	26 12.4	12 4.4	+ 2 58.8	+0.1096	0.6053	0.0703	+26	-36
22 Scorpii	5.5	3.99	14.6	24 53.6	12 23.4	+ 3 16.9	-1.2233	0.6055	0.0693	-55	-90
25 Scorpii	7.0	+4.11	-13.3	-25 20.7	18 29.8	+ 9 7.8	-1.1362	0.6078	-0.0499	-48	-90
31 Ophiuchi	6.7	4.20	11.8	25 30.1	11 1 1.1	- 8 37.6	-1.2360	0.6095	0.0287	-58	-90
B. A. C. 5800	7.5	4.28	11.0	26 51.9	4 27.4	- 5 20.2	+0.0419	0.6101	0.0172	+18	-40
A Ophiuchi	4.9	4.26	11.3	26 27.3	4 53.5	- 4 55.2	-0.3736	0.6101	0.0159	- 4	-67
B. A. C. 5813	6.8	4.26	11.3	26 24.1	5 12.6	- 4 36.9	-0.4311	0.6101	0.0148	- 7	-71
38 Ophiuchi	6.7	+4.29	-10.6	-26 31.1	5 42.3	- 4 8.6	-0.3215	0.6101	-0.0132	- 2	-63

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JULY.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels	
Name.	Mag.	Red'ns from x897.0.1		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	z'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
43 Ophiuchi	5.8	+4.36	-10.3	-28 2.8	11 7 45.2	- 2 10.9	+1.1794	0.6103	-0.0064	+62	+37
3 Sagittarii	4.6	4.44	7.5	27 47.6	16 33.9	+ 6 15.0	+1.0005	0.6097	+0.0227	+62	+20
B. A. C. 6194	5.1	4.53	4.3	27 4.8	12 3 45.0	- 7 2.6	+0.7480	0.6067	0.0589	+63	+1
λ Sagittarii	2.9	4.50	3.2	25 28.8	7 27.0	- 3 30.0	-0.6105	0.6051	0.0706	-12	-90
B. A. C. 6369	6.2	4.52	-1.0	25 6.8	13 44.4	+ 2 31.6	-0.4717	0.6018	0.0899	- 3	-74
σ Sagittarii	2.3	+4.58	0.0	-26 25.5	17 38.9	+ 6 16.3	+1.2144	0.5994	+0.1015	+64	+39
ψ Sagittarii	5.4	4.56	+ 2.3	25 26.0	18 1 24.3	-10 17.4	+1.0968	0.5939	0.1235	+65	+25
χ^1 Sagittarii	5.4	4.54	3.4	24 42.4	5 11.4	- 6 39.4	+0.8595	0.5909	0.1334	+65	+ 7
χ^2 Sagittarii	6.3	4.54	3.4	24 36.8	5 13.9	- 6 37.0	+0.7580	0.5909	0.1337	+65	0
χ^3 Sagittarii	5.6	4.53	3.4	24 9.8	5 17.3	- 6 33.8	+0.3218	0.5908	0.1339	+43	-25
53 Sagittarii	6.7	+4.50	+ 5.1	-23 39.6	10 55.3	- 1 9.2	+0.6127	0.5862	+0.1483	+62	- 9
B. A. C. 6727	6.2	4.50	5.2	23 39.8	11 2.2	- 1 2.6	+0.6323	0.5861	0.1486	+63	- 8
σ Capricorni	5.6	4.34	9.2	19 26.2	14 3 3.0	- 9 38.7	-0.9610	0.5714	0.1845	-21	-90
π Capricorni	5.1	4.31	9.8	18 32.8	6 23.0	- 6 26.1	-1.2405	0.5682	0.1910	-43	-90
θ Capricorni	6.2	4.32	10.1	18 55.3	7 27.9	- 5 23.6	-0.6528	0.5672	0.1930	- 1	-89
ν Capricorni	5.7	+4.26	+11.3	-18 29.9	11 47.8	- 1 13.2	-0.2309	0.5630	+0.2008	+22	-56
19 Capricorni	6.1	4.22	12.7	18 18.6	18 11.7	+ 4 57.0	+0.8985	0.5570	0.2114	+72	+ 7
B. A. C. 7263	5.9	4.17	12.8	16 25.5	19 29.0	+ 6 11.6	-0.7536	0.5557	0.2133	- 4	-90
21 Capricorni	6.4	4.19	13.2	17 55.7	20 52.3	+ 7 31.9	+1.0807	0.5544	0.2154	+72	+20
θ Capricorni	4.1	4.18	13.6	17 38.3	23 7.6	+ 9 42.5	+1.2746	0.5523	0.2186	+72	+38
29 Capricorni	5.7	+4.10	+14.3	-15 35.7	15 3 33.4	-10 0.8	+0.1636	0.5482	+0.2245	+45	-34
λ Capricorni	5.7	3.91	16.3	11 50.2	17 50.2	+ 3 47.3	-0.3881	0.5359	0.2400	+19	-65
50 Capricorni	6.9	3.91	16.3	12 9.9	17 54.7	+ 3 51.7	-0.0299	0.5359	0.2402	+37	-44
36 Aquarii	6.3	3.76	17.3	8 41.2	16 4 52.2	- 9 31.8	-0.9658	0.5274	0.2484	-12	-90
θ Aquarii	4.4	3.74	17.7	8 17.5	8 29.3	- 6 1.5	-0.4777	0.5248	0.2505	+16	-72
B. A. C. 7774	6.4	+3.75	+18.0	- 9 32.9	8 30.4	- 6 0.4	+0.8395	0.5248	+0.2505	+80	+ 2
ρ Aquarii	5.6	3.72	18.0	8 20.0	10 9.4	- 4 24.5	-0.0155	0.5236	0.2513	+40	-43
B. A. C. 7951	6.7	3.53	18.6	- 4 45.5	17 0 4.4	+ 9 5.0	-0.2320	0.5152	0.2563	+30	-56
κ Piscium	4.7	3.32	19.1	+ 0 41.8	20 21.9	+ 4 46.6	-0.8070	0.5064	0.2567	0	-71
9 Piscium	6.6	3.32	19.2	0 33.7	20 32.0	+ 4 56.5	-0.6168	0.5063	0.2566	+11	-82
15 Piscium	6.6	+3.28	+19.3	+ 0 45.0	18 0 52.9	+ 9 9.9	+0.2965	0.5050	+0.2558	+59	-27
16 Piscium	5.8	3.27	19.2	1 32.2	1 22.2	+ 9 38.4	+0.4194	0.5049	0.2557	+21	-67
λ Piscium	4.5	3.24	19.3	1 13.1	4 22.2	-11 26.8	+0.6865	0.5041	0.2549	+89	- 7
19 Piscium	4.9	3.21	19.0	2 55.2	6 40.5	- 9 12.4	-0.5512	0.5035	0.2542	+14	-76
22 Piscium	5.0	3.20	19.4	2 21.8	9 38.3	- 6 19.7	+0.7991	0.5029	0.2531	+90	- 1
d Piscium	5.3	+3.04	+18.5	+ 7 37.4	19 0 56.6	+ 8 32.4	-1.0528	0.5013	+0.2457	-15	-82
45 Piscium	6.9	3.02	18.7	7 7.6	3 40.4	+11 11.6	+0.1527	0.5012	0.2440	+51	-33
75 Piscium	6.0	2.84	17.3	12 24.5	1 27.4	+ 8 21.4	-0.4618	0.5033	0.2267	+19	-65
η Piscium	3.7	2.74	16.4	14 49.2	14 34.2	- 2 54.5	-0.2200	0.5065	0.2131	+31	-49
101 Piscium	6.3	2.72	16.5	14 8.4	16 49.2	- 0 43.4	+1.0039	0.5071	0.2105	+90	+18
103 Piscium	6.8	+2.71	+15.8	+16 6.4	18 37.0	+ 1 1.3	-0.7833	0.5077	+0.2084	0	-66
105 Piscium	6.3	2.71	15.9	15 53.3	18 50.1	+ 1 14.0	-0.4964	0.5078	0.2081	+16	-64
3 Arietis	6.0	2.69	15.5	16 54.1	22 24.8	+ 4 42.4	-0.8748	0.5090	0.2038	- 6	-73
4 Arietis	5.7	2.68	15.6	16 26.8	23 14.6	+ 5 30.7	-0.2067	0.5093	0.2028	+32	-47
ϵ Arietis	5.7	2.65	15.2	17 19.1	21 3 57.8	+10 5.7	-0.2243	0.5110	0.1967	+31	-47
15 Arietis	5.7	+2.60	+14.5	+19 1.1	10 43.7	- 7 20.5	-0.8000	0.5137	+0.1875	- 1	-71
B. A. C. 686	7.2	2.59	14.4	19 8.2	12 22.5	- 5 44.7	-0.6231	0.5146	0.1851	+ 9	-68
θ Arietis	5.7	2.57	14.3	19 25.7	14 31.9	- 3 39.2	-0.5506	0.5153	0.1820	+13	-64
23 Arietis	7.5	2.57	14.3	19 13.2	15 3.0	- 3 9.0	-0.2268	0.5155	0.1812	+31	-45
26 Arietis	6.0	2.53	14.1	19 24.1	20 49.0	+ 2 26.4	+0.5931	0.5181	0.1725	+83	- 1
ν Arietis	5.7	+2.51	+13.0	+21 31.1	22 0 52.0	+ 6 21.9	-1.0626	0.5200	+0.1661	-20	-68
ϵ Arietis	4.6	2.44	12.9	20 55.9	10 54.5	- 7 54.2	+1.1712	0.5248	0.1492	+90	+40
64 Arietis	5.7	2.38	11.1	24 21.7	22 57.1	+ 3 45.5	-0.9615	0.5308	0.1270	-14	-66
7 Tauri	6.0	2.34	10.9	24 7.3	23 3 46.1	+ 8 25.2	-0.1059	0.5332	0.1176	+37	-31
11 Tauri	6.7	2.33	10.4	24 59.9	6 44.2	+11 17.5	-0.7371	0.5347	0.1117	+ 1	-64
δ Pleiadum	6.3	+2.31	+10.6	+23 58.1	8 39.0	-10 51.5	+0.6141	0.5356	+0.1077	+87	+ 7

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JULY.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels	
Name.	Mag.	Red'ns from 1870.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	s'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
17 Tauri	4.3	+2.31	+10.7	+23 47.5	28 8 41.1	-10 49.5	+0.8126	0.5356	+0.1077	+90	+18
18 Tauri	6.3	2.32	10.4	24 31.1	8 48.4	-10 42.4	+0.0215	0.5357	0.1075	+44	-23
19 Tauri	5.0	2.31	10.5	24 8.8	8 50.1	-10 40.7	+0.4362	0.5357	0.1074	+71	-2
20 Tauri	5.0	2.31	10.5	24 2.9	9 7.6	-10 23.8	+0.5762	0.5358	0.1068	+83	+5
21 Tauri	7.0	2.31	10.5	24 14.1	9 9.7	-10 21.8	+0.3745	0.5359	0.1067	+66	-5
22 Tauri	7.0	+2.31	+10.5	+24 12.6	9 13.7	-10 17.9	+0.4089	0.5359	+0.1066	+69	-4
23 Tauri	4.7	2.31	10.7	23 37.8	9 22.1	-10 9.8	+1.0650	0.5360	0.1063	+90	+36
7 Tauri	3.1	2.31	10.6	23 47.4	9 54.4	-9 38.6	+0.9457	0.5362	0.1052	+90	+27
27 Tauri	4.0	2.30	10.5	23 44.5	10 41.6	-8 52.8	+1.0810	0.5366	0.1035	+90	+37
28 Tauri	6.2	2.30	10.5	23 49.5	10 42.1	-8 52.4	+0.9897	0.5366	0.1035	+90	+30
B. A. C. 2192	6.0	+2.30	+10.0	+25 16.2	11 12.0	-8 23.5	-0.5596	0.5368	+0.1025	+11	-56
8 Tauri	6.0	2.25	9.2	26 12.9	20 41.4	+0 47.0	-0.7265	0.5412	0.0822	+1	-64
7 Tauri	5.7	2.22	8.9	25 23.3	24 2 5.2	+5 59.9	+0.5979	0.5431	+0.0702	+86	+10
125 Tauri	6.0	2.02	5.8	25 50.4	25 12 37.0	-8 39.6	+1.1129	0.5535	-0.0123	+90	+48
136 Tauri	5.3	2.00	4.9	27 35.3	18 34.7	-2 54.4	-0.9209	0.5542	0.0271	-13	-62
139 Tauri	5.3	+1.98	+5.1	+25 56.5	20 40.4	-0 53.1	+0.8170	0.5543	-0.0322	+90	+26
2 Geminorum	3.2	1.88	3.2	25 14.0	26 16 58.1	-5 18.1	+0.4256	0.5538	0.0819	+70	0
37 Geminorum	6.3	1.86	2.7	25 30.3	22 0.8	-0 26.0	-0.3104	0.5531	0.0939	+25	-40
39 Geminorum	6.3	1.85	2.4	26 13.0	23 33.0	+1 3.2	-1.2294	0.5528	0.0975	-39	-64
40 Geminorum	6.3	1.85	2.4	26 3.3	23 50.7	+1 20.1	-1.0820	0.5528	0.0982	-24	-64
4 Geminorum	5.7	+1.84	+2.4	+24 21.8	27 1 11.5	+2 38.1	+0.6180	0.5525	-0.1013	+89	+8
48 Geminorum	6.0	1.82	2.0	24 18.1	5 40.1	+6 57.3	+0.2070	0.5516	0.1116	+55	-14
52 Geminorum	6.3	1.83	1.8	25 3.8	6 39.6	+7 54.8	-0.7301	0.5514	0.1139	+1	-65
58 Geminorum	6.3	1.79	1.6	23 8.6	10 37.9	+11 44.8	-0.8752	0.5505	0.1228	+90	+21
82 Geminorum	6.3	1.76	0.5	23 23.7	21 57.5	-1 18.8	-0.9277	0.5473	0.1473	+18	-67
84 Geminorum	6.8	+1.75	+0.4	+22 35.9	28 0 0.2	+0 39.8	-0.3762	0.5467	-0.1515	+22	-49
NEW MOON.											
43 Leonis	6.5	1.63	-7.3	7 3.8	30 23 38.3	-2 1.0	+0.9917	0.5248	0.2531	+90	+12
48 Leonis	5.5	1.65	7.7	7 28.9	31 5 28.0	+3 37.8	-0.9315	0.5240	0.2570	-7	-83
35 Sextantis	6.2	1.66	8.6	5 17.1	9 42.2	+7 44.1	+0.2646	0.5237	0.2593	+57	-28
4 Leonis	5.3	+1.70	-9.5	+4 10.1	18 14.5	-7 59.4	-0.8048	0.5233	-0.2630	0	-70
4 Leonis	6.2	+1.69	-10.1	+2 30.7	21 24.9	-4 54.9	+0.0776	0.5230	-0.2638	+47	-39

AUGUST.

75 Leonis	5.7	+1.74	-10.5	+2 34.4	1 2 31.8	+0 2.5	-1.3388	0.5237	-0.2651	-40	-87
76 Leonis	6.3	1.74	10.5	+2 12.7	3 20.3	+0 49.5	-1.1788	0.5237	0.2652	-24	-88
11 Leonis	4.4	1.78	11.8	-0 15.5	12 14.2	+9 26.8	-0.9854	0.5247	0.2657	-10	-90
7 Virginis	5.7	1.98	15.5	8 53.3	2 15 45.1	-11 54.6	+0.6685	0.5332	0.2564	+81	-8
69 Virginis	5.0	2.29	18.2	15 26.7	8 16 34.1	-11 55.1	+1.2600	0.5467	0.2327	+75	+35
75 Virginis	6.0	+2.33	-18.0	-14 50.3	19 0.1	-9 34.1	+0.0998	0.5484	-0.2296	+42	-37
83 Virginis	6.0	2.42	18.3	15 40.0	4 0 10.0	-4 34.8	-0.2457	0.5518	0.2225	+24	-57
85 Virginis	6.5	2.42	18.2	15 15.3	0 39.1	-4 6.7	-0.7718	0.5520	0.2217	-4	-90
87 Virginis	5.8	2.44	18.9	17 21.0	1 26.4	-3 21.1	+1.1834	0.5528	0.2206	+73	+28
89 Virginis	5.4	2.45	18.9	17 37.6	2 31.4	-2 18.4	+1.2270	0.5535	0.2189	+72	+33
B. A. C. 4722	5.8	+2.64	-18.6	-17 43.6	13 34.4	+8 21.0	-0.9930	0.5616	-0.2006	-21	-90
42 Libræ	5.7	3.37	17.2	23 29.3	6 0 7.5	-6 24.7	-0.8314	0.5864	0.1228	-19	-90
6 Scorpii	5.3	3.48	17.4	25 26.6	4 15.9	-2 26.2	+0.6577	0.5888	0.1116	+62	-6
A ³ Scorpii	5.2	3.49	17.0	25 1.5	5 17.6	-1 26.9	+0.1215	0.5895	0.1088	+30	-36
B. A. C. 5253	5.8	3.48	16.8	24 13.8	5 25.0	-1 19.8	-0.6961	0.5895	0.1084	+13	-90
B. A. C. 5254	5.8	+3.47	-16.6	-23 40.5	5 26.3	-1 18.6	-1.2560	0.5895	-0.1084	-56	-90
3 Scorpii	6.7	3.50	17.0	24 56.6	5 42.1	-1 3.5	-0.0052	0.5897	0.1074	+23	-43
4 Scorpii	6.3	3.52	17.2	25 58.0	6 0.7	-0 45.6	+0.9959	0.5900	0.1068	+64	+17
4 Scorpii	3.4	3.54	17.0	25 49.3	7 18.4	+0 29.0	+0.7134	0.5906	0.1032	+64	-2
B. A. C. 5314	5.7	3.60	16.7	25 34.9	9 2.7	+2 9.1	+0.2963	0.5915	0.0982	+39	-26
B. A. C. 5347	6.0	+3.63	-16.5	-26 3.2	10 52.0	+3 54.0	+0.5983	0.5925	-0.0930	+57	-9

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

AUGUST.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1897.0.		Apparent Declination.	Washington Mean Time.	Hour Angle <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.
		<i>Δα</i>	<i>Δδ</i>								
		<i>s</i>	<i>"</i>	<i>°</i>	<i>d h m</i>	<i>h m</i>				<i>°</i>	<i>'</i>
♏ Scorpii	3.4	+3.71	-15.5	-25 21.0	6 15 52.5	+ 8 42.2	-0.5417	0.5949	-0.0784	- 7	-80
♏ Scorpii	1.2	3.78	15.2	26 12.5	18 59.1	+11 41.1	+0.0945	0.5963	0.0691	+25	-37
22 Scorpii	5.5	3.77	14.8	24 53.6	19 18.6	+11 59.8	-1.2540	0.5964	0.0680	-59	-90
25 Scorpii	7.0	3.91	13.3	25 20.7	7 1 35.5	- 5 59.8	-1.1650	0.5984	0.0489	-50	-90
31 Ophiuchi	6.7	4.03	11.9	25 30.1	8 18.0	+ 0 26.9	-1.2662	0.6001	0.0280	-63	-90
B. A. C. 5800	7.5	+4.12	-11.5	-26 51.9	11 50.3	+ 3 50.3	+0.0294	0.6006	-0.0169	+17	-41
A Ophiuchi	4.9	4.10	11.9	26 27.3	12 17.2	+ 4 16.1	-0.3916	0.6006	0.0158	- 5	-68
B. A. C. 5813	6.8	4.10	11.8	26 24.1	12 36.8	+ 4 34.9	-0.4498	0.6006	0.0144	- 8	-73
38 Ophiuchi	6.7	4.13	11.0	26 31.1	13 7.4	+ 5 4.2	-0.3384	0.6007	0.0128	- 2	-64
43 Ophiuchi	5.8	4.21	11.0	28 2.8	15 13.9	+ 7 5.4	+1.1825	0.6008	-0.0063	+62	+38
3 Sagittarii	4.6	+4.34	- 8.2	-27 47.6	8 0 17.9	- 8 13.3	+1.0027	0.6005	+0.0225	+62	+19
B. A. C. 6194	5.1	4.49	5.1	27 4.8	11 47.7	+ 2 47.9	+0.7483	0.5979	0.0582	+63	+ 1
λ Sagittarii	2.9	4.49	3.7	25 28.8	15 35.8	+ 6 26.7	-0.6266	0.5966	0.0697	-13	-90
B. A. C. 6369	6.2	4.56	1.6	25 6.8	22 3.0	-11 22.0	-0.4850	0.5936	0.0909	- 3	-75
σ Sagittarii	2.3	4.64	- 0.7	26 25.5	9 2 3.4	- 7 31.4	+1.2212	0.5917	0.1003	+64	+41
ψ Sagittarii	5.4	+4.67	+ 1.8	-26 26.0	9 59.9	+ 0 6.1	+1.1024	0.5882	+0.1221	+65	+26
χ ¹ Sagittarii	5.4	4.67	3.0	24 42.5	13 52.0	+ 3 49.1	+0.8588	0.5845	0.1323	+65	+ 7
χ ² Sagittarii	6.3	4.67	3.0	24 36.8	13 54.5	+ 3 51.5	+0.7689	0.5845	0.1324	+65	+ 1
χ ³ Sagittarii	5.6	4.65	3.1	24 9.8	13 58.0	+ 3 54.8	+0.3192	0.5844	0.1325	+43	-25
53 Sagittarii	6.7	4.66	5.0	23 39.6	19 43.0	+ 9 26.4	+0.6129	0.5802	0.1469	+62	- 9
B. A. C. 6727	6.2	+4.67	+ 5.0	-23 39.8	19 50.1	+ 9 33.3	+0.6328	0.5801	+0.1472	+63	- 8
σ Capricorni	5.6	4.59	9.8	19 26.2	10 12 7.7	+ 1 13.9	-0.9733	0.5673	0.1832	-22	-90
π Capricorni	5.1	4.57	10.8	18 32.8	15 30.6	+ 4 29.4	-1.2542	0.5646	0.1898	-45	-90
ο Capricorni	6.2	4.59	10.9	18 55.3	16 36.4	+ 5 32.8	-0.6622	0.5636	0.1918	- 2	-90
υ Capricorni	5.7	4.57	12.2	18 29.9	20 59.6	+ 9 46.5	-0.2371	0.5600	0.1998	+21	-56
19 Capricorni	6.1	+4.56	+13.7	-18 18.6	11 3 27.6	- 7 59.1	+0.8980	0.5547	+0.2105	+72	+ 7
B. A. C. 7263	5.9	4.52	14.1	16 25.5	4 45.4	- 6 44.1	-0.7641	0.5536	0.2125	- 5	-90
21 Capricorni	6.4	4.55	14.4	17 55.7	6 9.6	- 5 22.8	+1.0812	0.5525	0.2146	+72	+20
θ Capricorni	4.1	4.54	14.9	17 38.3	8 26.1	- 3 11.0	+1.2759	0.5506	0.2179	+72	+38
29 Capricorni	5.7	4.48	16.0	15 35.7	12 53.7	+ 1 7.5	+0.1589	0.5471	0.2240	+45	-34
18 Aquarii	5.7	+4.42	+16.8	-13 19.0	16 47.0	+ 4 52.9	-1.3125	0.5439	+0.2287	-46	-90
λ Capricorni	5.7	4.33	18.7	11 50.2	12 3 13.8	- 9 1.1	-0.3954	0.5364	0.2401	+19	-66
50 Capricorni	6.9	4.33	18.7	12 9.9	3 18.3	- 8 56.7	-0.0364	0.5362	0.2402	+37	-45
36 Aquarii	6.3	4.23	20.4	8 41.2	14 15.5	+ 1 39.4	-0.9746	0.5288	0.2489	-12	-90
θ Aquarii	4.4	4.22	20.8	8 17.4	17 52.1	+ 5 9.2	-0.4863	0.5267	0.2513	+16	-72
B. A. C. 7774	6.4	+4.23	+20.9	- 9 32.9	17 53.1	+ 5 10.2	+0.8312	0.5267	+0.2513	+80	+ 1
ρ Aquarii	5.6	4.21	21.1	8 19.9	19 31.7	+ 6 45.7	-0.0242	0.5255	0.2521	+40	-44
B. A. C. 7951	6.7	4.09	22.3	- 4 45.4	18 9 22.3	- 3 49.1	-0.2423	0.5182	0.2576	+29	-56
κ Piscium	4.7	3.95	23.4	+ 0 41.9	14 5 28.3	- 8 19.0	-0.8166	0.5104	0.2585	0	-89
9 Piscium	6.6	3.95	23.6	0 33.8	5 38.3	- 8 9.3	-0.6343	0.5104	0.2585	+10	-84
15 Piscium	6.6	+3.91	+23.9	+ 0 45.0	9 56.1	- 3 59.0	+0.2791	0.5092	+0.2577	+58	-28
16 Piscium	5.8	3.90	23.9	1 32.2	10 25.1	- 3 30.8	-0.4344	0.5091	0.2576	+20	-68
λ Piscium	4.5	3.88	23.9	1 13.2	13 23.0	- 0 38.1	+0.6670	0.5084	0.2568	+87	- 8
19 Piscium	4.9	3.87	24.0	2 55.3	15 39.3	+ 1 34.3	-0.5674	0.5080	0.2561	+13	-78
22 Piscium	5.0	3.86	24.1	2 21.9	18 35.1	+ 4 25.0	+0.7775	0.5074	0.2551	+90	- 2
d Piscium	5.3	+3.75	+23.7	+ 7 37.5	15 9 41.2	- 4 55.0	-1.0702	0.5059	+0.2476	-16	-82
45 Piscium	6.9	3.74	23.8	7 7.7	12 22.8	- 2 18.1	+0.1291	0.5058	0.2459	+50	-34
75 Piscium	6.0	3.62	22.5	12 24.6	16 9 52.5	- 5 25.6	-0.4881	0.5074	0.2282	+17	-67
γ Piscium	3.7	3.55	21.6	14 49.3	22 50.0	+ 7 9.2	-0.2503	0.5100	0.2143	+29	-51
101 Piscium	6.3	3.55	21.6	14 8.4	17 1 3.5	+ 9 18.7	+0.9680	0.5106	0.2117	+90	+15
103 Piscium	6.8	+3.54	+20.9	+16 6.5	2 50.1	+11 2.2	-0.8124	0.5111	+0.2095	- 1	-74
105 Piscium	6.3	3.54	21.0	15 53.4	3 3.1	+11 14.8	-0.5266	0.5112	0.2093	+15	-66
3 Arietis	6.0	3.53	20.5	16 54.2	6 35.6	- 9 19.0	-0.9043	0.5122	0.2048	- 7	-73
4 Arietis	5.7	3.53	20.7	16 26.9	7 24.9	- 8 31.2	-0.2391	0.5126	0.2037	+30	-48
ι Arietis	5.7	3.50	20.2	17 19.2	12 5.5	- 3 58.9	-0.2572	0.5139	0.1975	+29	-49
15 Arietis	5.7	+3.47	+19.3	+19 1.2	18 47.9	+ 2 31.4	-0.8337	0.5162	+0.1881	- 3	-71

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

AUGUST.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1897.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		α	δ	α	d h m	h m				α	δ
B. A. C. 686	7.2	+3.46	+19.2	+19 8.2	17 20 25.8	+ 4 6.4	-0.6570	0.5167	+0.1857	+ 7	-70
θ Arietis	5.7	3.45	18.9	19 25.8	22 34.6	+ 6 11.2	-0.5848	0.5175	0.1825	+11	-66
23 Arietis	7.5	3.44	18.9	19 13.3	23 5.2	+ 6 40.9	-0.2621	0.5177	0.1818	+28	-47
26 Arietis	6.0	3.42	18.6	19 24.2	18 4 48.9	-11 45.9	+0.5543	0.5199	0.1729	+79	- 4
ν Arietis	5.7	3.41	17.5	21 31.2	8 50.6	- 7 51.6	-1.0978	0.5215	0.1664	-23	-68
ϵ Arietis	4.6	+3.34	+16.9	+20 56.0	18 50.6	+ 1 49.7	+1.1300	0.5257	+0.1492	+90	+36
64 Arietis	5.7	3.30	14.6	24 21.8	19 6 51.6	-10 32.3	-1.0007	0.5308	0.1269	-17	-66
7 Tauri	6.0	3.26	14.2	24 7.4	11 40.6	- 5 52.6	-0.1445	0.5329	0.1174	+35	-33
11 Tauri	6.7	3.26	13.5	25 0.0	14 38.7	- 3 0.3	-0.7773	0.5341	0.1114	- 2	-65
γ Pleiadum	6.3	3.23	13.7	23 58.1	16 33.5	- 1 9.3	+0.5725	0.5349	0.1075	+83	+ 5
17 Tauri	4.3	+3.23	+13.8	+23 47.6	16 35.7	- 1 7.2	+0.7711	0.5349	+0.1074	+90	+16
18 Tauri	6.3	3.24	13.5	24 31.2	16 43.0	- 1 0.1	-0.0195	0.5349	0.1072	+42	-26
19 Tauri	5.0	3.24	13.6	24 8.9	16 44.6	- 0 58.5	+0.3917	0.5350	0.1071	+68	- 5
20 Tauri	5.0	3.23	13.6	24 3.0	17 2.2	- 0 41.5	+0.5347	0.5351	0.1065	+79	+ 3
21 Tauri	7.0	3.23	13.6	24 14.2	17 4.3	- 0 39.5	+0.3316	0.5351	0.1064	+63	- 7
22 Tauri	7.0	+3.23	+13.6	+24 12.6	17 8.3	- 0 35.6	+0.3669	0.5351	+0.1063	+66	- 6
23 Tauri	4.7	3.23	13.8	23 37.9	17 16.7	- 0 27.5	+1.0232	0.5352	0.1060	+90	+32
η Tauri	3.1	3.22	13.6	23 47.4	17 49.0	+ 0 3.7	+0.9039	0.5354	0.1049	+90	+24
26 Tauri	7.0	3.22	13.4	23 31.0	18 30.5	+ 0 43.9	+1.2778	0.5357	0.1037	+90	+58
27 Tauri	4.0	3.22	13.5	23 44.5	18 36.3	+ 0 49.6	+1.0393	0.5357	0.1033	+90	+34
28 Tauri	6.2	+3.22	+13.5	+23 49.5	18 36.9	+ 0 50.1	+0.9481	0.5357	+0.1033	+90	+28
B. A. C. 1192	6.0	3.23	12.9	25 16.3	19 6.7	+ 1 18.9	-0.6004	0.5359	0.1022	+ 9	-59
ρ Tauri	6.0	3.17	11.5	26 12.9	20 4 37.5	+10 30.9	-0.7666	0.5397	0.0819	- 2	-64
χ Tauri	5.7	3.13	11.2	25 23.4	10 2.3	- 8 15.2	+0.5566	0.5417	+0.0699	+82	+ 8
125 Tauri	6.0	2.86	6.4	25 50.5	21 20 45.3	+ 1 16.4	+1.0749	0.5506	-0.0121	+90	+45
136 Tauri	5.3	+2.83	+ 5.0	+27 35.4	22 2 45.3	+ 7 4.0	-0.9595	0.5512	-0.0267	-16	-62
139 Tauri	5.3	2.79	5.2	25 56.5	4 51.8	+ 9 5.6	+0.7830	0.5514	0.0319	+90	+25
ϵ Geminorum	3.2	2.59	2.6	25 14.0	23 1 16.5	+ 4 47.9	+0.3946	0.5515	0.0813	+68	- 1
37 Geminorum	6.3	2.55	1.8	25 30.3	6 20.6	+ 9 41.6	-0.3419	0.5510	0.0928	+24	-41
39 Geminorum	6.3	2.54	1.4	26 13.0	7 53.2	+11 11.1	-1.2603	0.5506	0.0968	-48	-64
40 Geminorum	6.3	+2.54	+ 1.4	+26 3.2	8 11.0	+11 28.2	-1.1126	0.5505	-0.0975	-28	-64
ω Geminorum	5.7	2.51	1.6	24 21.7	9 32.2	-11 13.3	+0.5870	0.5504	0.1006	+85	+ 7
48 Geminorum	6.0	2.47	1.0	24 18.1	14 1.7	- 6 53.2	+0.1776	0.5497	0.1109	+53	-15
52 Geminorum	6.3	2.47	0.6	25 3.8	15 1.3	- 5 55.6	+0.7584	0.5495	0.1132	- 1	-65
58 Geminorum	6.3	2.41	+ 0.6	23 8.6	19 0.2	- 2 5.0	+0.8471	0.5488	0.1221	+90	+19
82 Geminorum	6.3	+2.32	- 0.9	+23 23.7	24 6 20.8	+ 8 52.3	-0.9497	0.5464	-0.1466	-13	-67
84 Geminorum	6.8	2.27	1.0	22 35.9	8 23.4	+10 50.8	-0.3913	0.5459	0.1509	+21	-50
7 Cancri	6.3	2.25	1.6	22 21.5	13 20.5	- 8 22.2	-0.9102	0.5459	0.1609	-10	-68
μ Cancri	5.7	2.24	1.7	21 52.8	15 8.6	- 6 37.7	-0.6916	0.5442	0.1645	+ 4	-68
B. A. C. 2788	6.0	2.18	2.2	21 4.3	20 56.8	- 1 1.2	-0.8133	0.5426	0.1756	- 3	-69
θ Cancri	5.7	+2.12	- 2.5	+18 26.5	25 2 12.2	+ 4 3.8	+1.0355	0.5412	-0.1853	+90	+25
35 Cancri	6.3	2.12	2.9	19 56.6	3 54.6	+ 5 42.7	-0.8770	0.5408	0.1883	- 6	-70
B. A. C. 2899	7.2	2.11	2.9	19 37.5	5 3.4	+ 6 49.2	-0.7563	0.5404	0.1903	+ 1	-68
B. A. C. 2914	7.2	2.11	3.1	19 54.1	6 1.0	+ 7 45.0	-1.2330	0.5401	0.1920	-35	-70
ϵ Cancri	7.2	2.10	3.2	19 54.5	6 17.9	+ 8 1.3	-1.2930	0.5400	0.1925	-43	-70
δ Cancri	4.0	+2.08	- 3.3	+18 31.9	8 17.8	+ 9 57.3	-0.2207	0.5395	-0.1959	+30	-46
ϕ Cancri	6.0	2.02	3.5	15 58.7	14 22.7	- 8 9.8	+1.2588	0.5379	0.2059	+90	+42
68 Cancri	7.5	2.01	4.0	17 29.0	16 18.6	- 6 17.7	-0.7330	0.5374	0.2089	+ 3	-72
π Cancri	6.3	1.94	4.2	15 24.6	21 21.6	- 1 24.7	+0.3803	0.5361	0.2165	+65	-17
π_2 Cancri	6.0	1.96	4.5	15 22.1	22 43.6	- 0 5.3	+0.1271	0.5358	0.2185	+50	-30
NEW MOON.											
76 Leonis	6.3	+1.72	-10.0	+ 2 12.7	28 10 30.0	+ 9 46.8	-1.1237	0.5305	-0.2679	-20	-88
ν Leonis	4.4	1.72	10.9	- 0 15.5	19 11.7	- 5 48.3	-0.9244	0.5320	0.2685	- 6	-90
η Virginis	5.7	1.80	13.8	8 53.3	29 22 4.9	- 3 47.3	+0.7332	0.5402	0.2590	+80	- 4
83 Virginis	6.0	2.10	16.4	15 40.0	31 5 52.1	+ 2 54.7	-0.1557	0.5572	0.2241	+28	-51
85 Virginis	6.5	+2.11	-16.3	-15 15.3	6 20.6	+ 3 22.1	-0.6783	0.5575	-0.2234	+ 1	-90

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

AUGUST.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallel	
Name.	Mag.	Red'ns from 1897.		Apparent Declination.	Washington Mean Time.	Hour Angle <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	<i>N.</i>	<i>S.</i>
		$\Delta\alpha$	$\Delta\delta$								
87 Virginis	5.8	+2.11	-16.8	-17 20.9	81 7 7.2	+ 4 7.1	+1.2650	0.5579	-0.2221	+73	+37
B. A. C. 4722	5.8	+2.30	-16.7	-17 43.6	19 53	- 8 20.8	-0.8945	0.5656	-0.2016	-14	-90

SEPTEMBER.

42 Libræ	5.7	+2.06	-16.2	-23 29.3	2 5 27.2	+ 0 42.3	-0.7322	0.5864	-0.1227	-13	-90
♋ Scorpii	5.3	3.05	16.4	25 26.6	9 36.1	+ 4 41.3	+0.7577	0.5882	0.1114	+65	+ 1
♏ Scorpii	5.2	3.07	16.1	25 1.4	10 37.9	+ 5 40.6	+0.2213	0.5887	0.1085	+35	-30
B. A. C. 5253	5.8	3.08	16.1	24 13.8	10 45.4	+ 5 47.9	-0.5945	0.5888	0.1082	- 8	-86
B. A. C. 5254	5.8	+3.06	-15.6	-23 40.5	10 46.6	+ 5 49.0	-1.1577	0.5888	-0.1082	-48	-90
3 Scorpii	6.7	3.08	16.0	24 56.6	11 2.4	+ 6 4.1	+0.0947	0.5889	0.1074	+28	-37
4 Scorpii	6.3	3.09	16.3	25 58.0	11 21.1	+ 6 22.1	+1.0967	0.5890	0.1067	+64	+26
♏ Scorpii	3.4	3.12	16.1	25 49.3	12 39.2	+ 7 37.1	+0.8139	0.5896	0.1029	+64	+ 5
B. A. C. 5314	5.7	3.15	15.8	25 34.9	14 23.9	+ 9 17.6	+0.3935	0.5902	0.0980	+44	-20
B. A. C. 5347	6.0	+3.20	-15.6	-26 3.2	16 13.7	+11 3.0	+0.6990	0.5910	-0.0927	+63	- 3
♏ Scorpii	3.4	3.28	14.8	25 21.0	21 16.2	- 8 6.8	-0.4440	0.5927	0.0781	- 2	-72
♏ Scorpii	1.2	3.36	14.5	26 12.4	3 0 24.1	- 5 6.5	+0.1939	0.5937	0.0688	+30	-31
22 Scorpii	5.5	3.33	14.0	24 53.5	0 43.8	- 4 47.6	-1.1596	0.5937	0.0678	-48	-90
25 Scorpii	7.0	3.50	13.3	20 20.7	7 4.3	+ 1 17.3	-1.0730	0.5951	0.0488	-42	-90
31 Ophiuchi	6.7	+3.63	-11.8	-25 30.1	13 51.8	+ 7 48.1	-1.1758	0.5959	-0.0280	-53	-90
B. A. C. 5800	7.5	3.72	11.6	26 51.9	17 26.9	+11 14.4	+0.1258	0.5960	0.0170	+22	-35
♏ Ophiuchi	4.9	3.71	12.0	26 27.3	17 54.2	+11 40.5	-0.2978	0.5960	0.0156	0	-61
B. A. C. 5813	6.8	3.72	11.9	26 24.1	18 14.1	-12 0.4	-0.3564	0.5960	0.0146	- 3	-65
38 Ophiuchi	6.7	3.73	11.2	26 31.1	18 45.1	-11 30.7	-0.2445	0.5960	-0.0130	+ 3	-58
3 Sagittarii	4.6	+3.98	- 8.8	-27 47.6	4 6 6.6	- 0 37.2	+1.1026	0.5947	+0.0219	+62	+28
B. A. C. 6194	5.1	4.16	5.7	27 4.8	17 49.8	+10 37.4	+0.8433	0.5913	0.0571	+63	+ 7
♏ Sagittarii	2.9	4.18	5.2	25 28.8	21 42.5	- 9 39.2	-0.5463	0.5896	0.0685	- 8	-81
B. A. C. 6369	6.2	4.28	- 3.0	25 6.9	5 4 18.2	- 3 19.4	-0.4053	0.5866	0.0872	+ 1	-69
♏ Sagittarii	5.4	4.43	+ 0.9	25 26.0	16 31.4	+ 8 25.1	+1.1903	0.5795	0.1199	+65	+35
♏ Sagittarii	5.4	+4.46	+ 2.1	-24 42.5	20 29.1	-11 46.3	+0.9420	0.5769	+0.1298	+65	+13
♏ Sagittarii	6.3	4.45	2.1	24 36.8	20 31.7	-11 43.8	+0.8513	0.5769	0.1299	+65	+ 6
♏ Sagittarii	5.6	4.44	2.3	24 9.8	20 35.2	-11 40.5	+0.3969	0.5768	0.1301	+55	-21
53 Sagittarii	6.7	4.48	4.1	23 39.7	6 2 28.5	- 6 0.5	+0.6902	0.5729	0.1442	+66	- 4
B. A. C. 6727	6.2	4.48	4.2	23 39.8	2 35.7	- 5 53.6	+0.7100	0.5727	0.1445	+66	- 3
♏ Capricorni	5.6	+4.50	+ 9.4	-19 26.2	19 16.4	+10 10.3	-0.9251	0.5604	+0.1800	-19	-90
♏ Capricorni	5.1	4.49	10.5	18 32.8	22 43.8	-10 29.7	-1.2123	0.5578	0.1865	-40	-90
♏ Capricorni	6.2	4.51	10.5	18 55.3	23 51.1	- 9 24.8	-0.6152	0.5569	0.1886	+ 1	-85
♏ Capricorni	5.7	4.51	11.9	18 29.9	7 4 20.2	- 5 5.2	-0.1898	0.5536	0.1965	+23	-53
19 Capricorni	6.1	4.54	13.4	18 18.6	10 56.6	+ 1 17.5	+0.9500	0.5487	0.2071	+72	+11
B. A. C. 7263	5.9	+4.50	+14.0	-16 25.5	12 16.1	+ 2 34.4	-0.7295	0.5477	+0.2092	+ 6	-90
21 Capricorni	6.4	4.54	14.1	17 55.7	13 41.9	+ 3 57.2	+1.1346	0.5466	0.2112	+72	+24
♏ Capricorni	4.1	4.54	14.6	17 38.3	16 1.2	+ 6 11.7	+1.3258	0.5450	0.2146	+72	+46
29 Capricorni	5.7	4.51	16.0	15 35.7	20 34.1	+10 35.6	+0.1934	0.5417	0.2207	+46	-32
18 Aquarii	5.7	4.48	17.1	13 18.9	8 0 31.8	- 9 34.6	-1.2956	0.5390	0.2257	-43	-90
♏ Capricorni	5.7	+4.45	+19.5	-11 50.1	11 9.5	+ 0 42.4	-0.3819	0.5321	+0.2370	+19	-65
50 Capricorni	6.9	4.46	19.3	12 9.9	11 14.0	+ 0 46.8	-0.0204	0.5321	0.2371	+38	-44
36 Aquarii	6.3	4.41	21.7	8 41.2	22 20.7	+11 32.4	-0.9792	0.5256	0.2461	-13	-90
♏ Aquarii	4.4	4.41	22.2	8 17.4	9 2 0.0	- 8 55.1	-0.4919	0.5237	0.2485	+15	-72
B. A. C. 7774	6.4	4.43	22.1	9 32.8	2 1.0	- 8 54.1	+0.8340	0.5237	0.2485	+80	+ 2
♏ Aquarii	5.6	+4.41	+22.4	- 8 19.9	3 40.8	- 7 17.4	-0.0295	0.5229	+0.2496	+39	-44
B. A. C. 7951	6.7	4.34	24.4	- 4 45.4	17 39.5	+ 6 15.9	-0.2640	0.5168	0.2555	+28	-57
♏ Piscium	4.7	4.29	26.4	+ 0 42.1	10 13 51.9	+ 1 52.5	-0.8722	0.5108	0.2574	- 4	-89
9 Piscium	6.6	4.29	26.5	0 33.8	14 1.7	+ 2 2.0	-0.6833	0.5108	0.2573	+ 8	-86
15 Piscium	6.6	4.28	26.8	0 45.1	18 20.0	+ 6 12.8	+0.2227	0.5099	0.2567	+55	-31
16 Piscium	5.8	+4.26	+26.9	+ 1 32.4	18 49.1	+ 6 41.1	+0.4958	0.5098	+0.2566	+17	-72

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

SEPTEMBER.

THE STAR'S				AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1870.		Apparent Declination.	Washington Mean Time.	Hour Angle H	γ	γ'	N.	S.
		$\Delta\alpha$	$\Delta\delta$							
λ Piscium	4.5	+4.26	+26.9	+ 1 13.2	10 21 47.0	+ 9 33.8	+0.6063	0.5094	+0.2560	+81 -11
19 Piscium	4.9	4.25	27.1	2 55.4	11 0 3.7	+11 46.5	-0.6328	0.5090	0.2554	+10 -83
22 Piscium	5.0	4.25	27.3	2 21.9	2 59.1	- 9 23.2	+0.7071	0.5087	0.2545	+90 - 5
d Piscium	5.3	4.21	27.5	7 37.5	18 3.5	+ 5 15.1	-1.1592	0.5081	0.2474	-23 -82
45 Piscium	6.9	4.22	27.5	7 7.8	20 44.4	+ 7 51.3	+0.0369	0.5081	0.2458	+44 -39
75 Piscium	6.0	+4.19	+26.4	+12 24.7	12 18 7.4	+ 4 37.1	-0.6052	0.5104	+0.2285	+11 -74
η Piscium	3.7	4.18	25.9	14 49.3	18 6 59.8	- 6 53.3	-0.3808	0.5134	0.2146	+22 -58
101 Piscium	6.3	4.18	25.8	14 8.5	9 12.5	- 4 44.5	+0.8345	0.5139	0.2120	+90 0
103 Piscium	6.8	4.19	25.3	16 6.6	10 58.4	- 3 1.7	-0.9505	0.5143	0.2098	-10 -74
105 Piscium	6.3	4.19	25.4	15 53.4	11 11.3	- 2 49.2	-0.6605	0.5144	0.2096	+ 7 -73
3 Arietis	6.0	+4.19	+25.0	+16 54.2	14 42.3	+ 0 35.5	-1.0415	0.5155	+0.2052	-17 -73
4 Arietis	5.7	4.18	25.0	16 27.0	15 31.3	+ 1 23.0	-0.3773	0.5156	0.2040	+22 -56
ϵ Arietis	5.7	4.18	24.5	17 19.3	20 10.1	+ 5 53.5	-0.3994	0.5171	0.1978	+22 -57
15 Arietis	5.7	4.18	23.6	19 1.3	14 2 50.0	-11 38.7	-0.9793	0.5192	0.1883	-13 -71
B. A. C. 686	7.2	4.18	23.5	19 8.3	4 27.3	-10 4.4	-0.8085	0.5198	0.1862	- 2 -71
θ Arietis	5.7	+4.17	+23.1	+19 25.9	6 35.0	- 8 0.6	-0.7352	0.5205	+0.1828	+ 2 -70
23 Arietis	7.5	4.17	23.2	19 13.4	7 5.7	- 7 30.8	-0.4129	0.5206	0.1820	+20 -56
26 Arietis	6.0	4.16	22.7	19 24.3	12 47.6	- 1 59.5	+0.3988	0.5226	0.1730	+67 -11
ν Arietis	5.7	4.18	21.6	21 31.3	16 48.0	+ 1 53.5	-1.2545	0.5241	0.1664	-40 -68
μ Arietis	6.0	4.15	21.9	19 34.7	18 34.1	+ 3 36.3	+1.1796	0.5247	0.1635	+90 +39
ϵ Arietis	4.6	+4.14	+20.6	+20 56.0	15 2 45.6	+11 32.5	+0.9660	0.5277	+0.1492	+90 +24
64 Arietis	5.7	4.14	18.1	24 21.8	14 45.0	- 0 51.1	-1.1702	0.5322	0.1267	-32 -66
66 Arietis	6.0	4.11	18.3	22 27.2	16 45.0	+ 1 5.1	+1.1924	0.5329	0.1227	+90 +45
7 Tauri	6.0	4.12	17.5	24 7.4	19 33.7	+ 3 48.3	-0.3178	0.5339	0.1171	+25 -43
9 Tauri	7.0	4.10	17.6	22 52.5	20 46.7	+ 4 58.9	+1.2053	0.5343	0.1147	+90 +47
11 Tauri	6.7	+4.13	+16.7	+25 0.1	22 31.9	+ 6 40.7	-0.9499	0.5349	+0.1111	-14 -65
g Pleiadum	6.3	4.10	16.7	23 58.2	16 0 26.8	+ 8 31.8	+0.4004	0.5356	0.1072	+68 - 5
17 Tauri	4.3	4.10	16.8	23 47.6	0 29.0	+ 8 33.9	+0.5990	0.5356	0.1071	+85 + 7
18 Tauri	6.3	4.11	16.5	24 31.2	0 36.3	+ 8 41.0	-0.1921	0.5356	0.1068	+32 -35
19 Tauri	5.0	4.11	16.6	24 8.9	0 38.0	+ 8 42.6	+0.2226	0.5357	0.1068	+56 -13
20 Tauri	5.0	+4.10	+16.6	+24 3.0	0 55.5	+ 8 59.6	+0.3623	0.5358	+0.1062	+65 - 6
21 Tauri	7.0	4.10	16.5	24 14.2	0 57.6	+ 9 1.6	+0.1591	0.5358	0.1061	+52 -16
22 Tauri	7.0	4.10	16.5	24 12.7	1 1.6	+ 9 5.5	+0.1954	0.5358	0.1060	+54 -14
23 Tauri	4.7	4.09	16.7	23 37.9	1 10.1	+ 9 13.7	+0.8513	0.5358	0.1057	+90 +21
η Tauri	3.1	4.09	16.6	23 47.5	1 42.4	+ 9 44.9	+0.7318	0.5360	0.1046	+90 +14
26 Tauri	7.0	+4.09	+16.4	+23 32.7	2 23.8	+10 25.0	+1.0751	0.5363	+0.1032	+90 +39
27 Tauri	4.0	4.09	16.5	23 44.6	2 29.7	+10 30.7	+0.8670	0.5363	0.1029	+90 +22
28 Tauri	6.2	4.09	16.5	23 49.6	2 30.3	+10 31.2	+0.7757	0.5363	0.1029	+90 +17
B. A. C. 1192	6.0	4.10	15.8	25 16.3	3 0.2	+11 0.2	-0.7742	0.5365	0.1019	- 2 -65
ρ Tauri	6.0	4.07	14.1	26 13.0	12 32.1	- 3 46.8	-0.9446	0.5395	0.0815	-14 -64
χ Tauri	5.7	+4.03	+13.5	+25 23.4	17 58.2	+ 1 28.5	+0.3808	0.5411	+0.0695	+67 - 1
125 Tauri	6.0	3.76	6.9	25 50.5	18 4 57.7	+11 16.6	+0.9019	0.5473	-0.0119	+90 +34
136 Tauri	5.3	3.74	5.2	27 35.4	11 1.9	- 6 51.7	-1.1395	0.5477	0.0264	-32 -62
139 Tauri	5.3	3.68	5.4	25 56.5	13 9.9	- 4 48.0	+0.6108	0.5477	0.0315	+88 +15
ϵ Geminorum	3.2	3.44	1.8	25 14.0	19 9 51.2	- 8 49.4	+0.2277	0.5467	0.0803	+56 -10
37 Geminorum	6.3	+3.39	+ 0.7	+25 30.3	14 59.8	- 3 51.3	-0.5098	0.5460	-0.0918	+14 -52
40 Geminorum	6.3	3.38	0.2	26 3.2	16 51.8	- 2 3.1	-1.2834	0.5458	0.0961	-53 -64
ω Geminorum	5.7	3.33	+ 0.5	24 21.7	18 14.2	- 0 43.5	+0.4253	0.5456	0.0992	+70 - 2
48 Geminorum	6.0	3.28	- 0.3	24 18.0	22 47.7	+ 3 40.6	+0.0165	0.5448	0.1093	+43 -24
52 Geminorum	6.3	3.29	0.8	25 3.8	23 48.2	+ 4 39.1	-0.9233	0.5447	0.1115	-12 -65
58 Geminorum	6.3	+3.20	- 0.9	+23 8.6	20 3 50.7	+ 8 33.4	+0.6921	0.5440	-0.1203	+90 +10
82 Geminorum	6.3	3.06	2.8	23 23.7	15 21.1	- 4 19.4	-1.1038	0.5417	0.1444	-25 -67
84 Geminorum	6.8	3.03	2.9	22 35.9	17 25.4	- 2 19.2	-0.5479	0.5412	0.1487	+12 -59
μ^2 Cancri	6.3	2.94	3.9	21 52.8	21 0 16.1	+ 4 17.7	-0.8369	0.5398	0.1621	- 5 -68
B. A. C. 2788	6.0	2.85	4.3	21 4.3	6 8.6	+ 9 58.6	-0.9530	0.5384	0.1732	-12 -69
θ Cancri	5.7	+2.75	- 4.6	+18 26.5	11 27.8	- 8 52.7	+0.9099	0.5373	-0.1828	+90 +15

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

SEPTEMBER.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels	
Name.	Magn.	Red'ns from 1897.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	γ	π	γ'	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
35 Cancri	6.3	+2.76	-5.3	+19 56.6	21 13 11.4	-7 12.5	-1.0094	0.5369	-0.1858	-16	-70
B. A. C. 2899	7.2	2.73	5.2	19 37.5	14 20.9	-6 5.3	-0.8870	0.5366	0.1878	-7	-70
δ Cancri	4.0	2.68	5.6	18 31.9	17 37.3	-2 55.3	-0.3459	0.5360	0.1934	+24	-52
ϕ Cancri	6.0	2.58	5.6	15 58.6	23 45.6	+3 1.0	+1.1448	0.5348	0.2034	+90	+31
68 Cancri	7.5	2.58	6.3	17 29.0	22 1 42.5	+4 54.0	-0.8461	0.5344	0.2064	-4	-73
π Cancri	6.3	+2.47	-6.3	+15 24.5	6 47.7	+9 49.4	+0.2733	0.5335	-0.2141	+58	-21
π Cancri	6.0	2.48	6.7	15 22.0	8 10.2	+11 9.4	+0.0217	0.5332	0.2161	+44	-35
18 Leonis	6.0	2.28	7.9	12 16.9	23 8.6	+1 38.9	-0.1285	0.5314	0.2357	+35	-45
19 Leonis	7.0	2.27	7.8	12 2.6	23 39.0	+2 8.3	-0.0020	0.5313	0.2362	+42	-39
21 Leonis	6.8	2.26	8.1	12 19.3	23 1 16.6	+3 42.7	-0.6741	0.5311	0.2381	+7	-77
A Leonis	4.7	+2.17	-8.7	+10 30.0	9 32.0	+11 42.4	-0.7788	0.5310	-0.2468	+1	-73
43 Leonis	6.5	2.09	9.0	7 3.8	16 50.9	-5 12.7	+0.9505	0.5308	0.2534	+90	+10
48 Leonis	5.5	2.05	9.5	7 28.9	22 32.3	+0 17.8	-0.9415	0.5311	0.2577	-8	-83
35 ^s Sextantis	6.2	2.03	9.7	5 17.0	24 2 39.5	+4 17.1	+0.2574	0.5314	0.2605	+57	-28
δ Leonis	5.3	1.98	10.3	+4 10.0	10 56.7	-11 41.5	-0.7741	0.5326	0.2649	+2	-78
NEW MOON.											
B. A. C. 4722	5.8	+2.07	-15.0	-17 43.5	28 2 21.7	+0 43.3	-0.7405	0.5754	-0.2036	-6	-90
42 Libræ	5.7	2.57	14.6	23 29.2	29 11 47.0	+8 49.6	-0.5435	0.5946	0.1235	-3	-80
δ Scorpii	5.3	2.65	14.7	25 26.5	15 49.9	-11 17.4	+0.9327	0.5963	0.1120	+65	+13
A ^s Scorpii	5.2	2.66	14.5	25 1.4	16 50.4	-10 19.3	+0.4026	0.5967	0.1091	+46	-20
B. A. C. 5253	5.8	+2.66	-14.5	-24 13.8	16 57.6	-10 12.4	-0.4036	0.5968	-0.1088	+3	-68
B. A. C. 5254	5.8	2.66	14.1	23 40.5	16 58.8	-10 11.3	-0.9605	0.5968	0.1087	-29	-90
3 Scorpii	6.7	2.67	14.6	24 56.5	17 14.3	-9 56.5	+0.2779	0.5968	0.1080	+38	-27
π Scorpii	3.4	2.70	14.3	25 49.3	18 48.8	-8 25.8	+0.9901	0.5974	0.1034	+64	+17
B. A. C. 5314	5.7	2.73	14.2	25 34.9	20 31.1	-6 47.7	+0.5789	0.5980	0.0984	+56	-10
B. A. C. 5347	6.0	+2.77	-14.1	-26 3.2	22 18.6	-5 4.6	+0.8797	0.5987	-0.0931	+64	+9
σ Scorpii	3.4	2.85	13.6	25 21.0	30 3 14.7	-0 20.9	-0.2481	0.5998	0.0783	+8	-57
α Scorpii	1.2	2.91	13.2	26 12.4	6 19.0	+2 35.7	+0.3850	0.6003	0.0690	+42	-21
22 Scorpii	5.5	2.90	12.7	24 53.5	6 38.3	+2 54.2	-0.9551	0.6003	0.0680	-32	-90
25 Scorpii	7.0	3.02	11.8	25 20.6	12 52.0	+8 52.3	-0.8669	0.6010	0.0487	-28	-90
31 Ophiuchi	6.7	+3.14	-10.9	-25 30.1	19 32.9	-8 43.5	-0.9696	0.6009	-0.0279	-37	-90
B. A. C. 5800	7.5	3.22	10.8	26 51.9	23 5.1	-5 20.1	+0.3260	0.6006	0.0168	+33	-24
A Ophiuchi	4.9	3.20	11.3	26 27.2	23 32.0	-4 54.3	-0.0943	0.6005	0.0154	+10	-48
B. A. C. 5813	6.8	+3.21	-11.3	-26 24.1	23 51.6	-4 35.6	-0.1524	0.6005	-0.0144	+7	-52

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38 Ophiuchi	6.7	+3.24	-10.4	-26 31.1	1 0 22.3	-4 6.1	-0.0412	0.6004	-0.0128	+22	-45
B. A. C. 6194	5.1	3.68	5.7	27 4.8	23 15.1	-6 9.9	+1.0463	0.5926	+0.0571	+63	+22
λ Sagittarii	2.9	+3.71	-4.5	-25 28.8	2 3 7.1	-2 27.3	-0.3372	0.5906	+0.0683	+3	-64
B. A. C. 6369	6.2	3.77	-2.6	26 6.9	9 42.2	+3 52.0	-0.1988	0.5885	0.0870	+11	-54
B. A. C. 6607	5.9	3.94	+1.2	22 35.6	3 0 4.4	-6 19.5	-1.2576	0.5764	0.1243	-54	-90
χ Sagittarii	5.4	4.01	1.3	24 42.5	1 55.6	-4 32.5	+1.1458	0.5751	0.1288	+65	+30
χ Sagittarii	6.3	4.02	1.3	24 36.8	1 58.2	-4 30.0	+1.0540	0.5750	0.1289	+65	+22
χ Sagittarii	5.6	+4.00	+1.5	-24 9.8	2 1.7	-4 26.7	+0.5993	0.5750	+0.1290	+60	-10
53 Sagittarii	6.7	4.06	3.1	23 39.7	7 57.3	+1 15.6	+0.8910	0.5705	0.1428	+66	+9
B. A. C. 6727	6.2	4.07	3.2	23 39.8	8 4.6	+1 22.6	+0.9110	0.5702	0.1431	+66	+10
σ Capricorni	5.6	4.14	8.5	19 26.3	4 0 54.7	-6 24.1	-0.7393	0.5566	0.1771	-7	-90
π Capricorni	5.1	4.15	9.5	18 32.8	4 24.8	-3 1.3	-1.0300	0.5538	0.1841	-25	-90
B. A. C. 7044	7.0	+4.15	+9.7	-18 12.7	5 9.9	-2 17.8	-1.2399	0.5532	+0.1850	-43	-90
ϕ Capricorni	6.2	4.17	9.6	18 55.3	5 32.9	-1 55.6	-0.4318	0.5528	0.1861	+10	-71
ν Capricorni	5.7	4.19	10.9	18 29.9	10 5.4	+2 27.5	-0.0092	0.5493	0.1937	+33	-43
19 Capricorni	6.1	4.24	12.3	18 18.6	16 47.4	+8 55.8	+1.1297	0.5441	0.2041	+72	+24
B. A. C. 7263	5.9	4.22	13.1	16 25.5	18 8.0	+10 3.7	-0.5596	0.5426	0.2060	+6	-79
29 Capricorni	5.7	+4.26	+15.1	-15 35.7	5 2 33.7	-5 37.4	+0.3618	0.5369	+0.2172	+56	-23

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

OCTOBER.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1877.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
18 Aquarii	5.7	+4.24	+16.4	-13 18.9	5 6 35.1	- 1 43.9	-1.1458	0.5341	+0.2220	-28	-90
λ Capricorni	5.7	4.26	18.9	11 50.2	17 23.2	+ 8 43.6	-0.2412	0.5272	0.2331	+26	-56
50 Capricorni	6.9	4.28	18.7	12 9.9	17 27.8	+ 8 48.1	+0.1218	0.5271	0.2332	+45	-36
36 Aquarii	6.3	4.27	21.3	8 41.2	6 4 45.5	- 4 15.2	-0.8621	0.5209	0.2421	- 6	-90
θ Aquarii	4.4	4.29	22.0	8 17.4	8 28.4	- 0 39.1	-0.3780	0.5191	0.2444	+21	-64
B. A. C. 7774	6.4	+4.31	+21.7	- 9 32.8	8 29.5	- 0 38.0	+0.9574	0.5191	+0.2444	+80	+10
ρ Aquarii	5.6	4.30	22.2	8 19.9	10 10.8	+ 1 0.2	+0.0844	0.5184	0.2454	+45	-37
B. A. C. 7951	6.7	4.29	24.7	- 4 45.4	7 0 22.6	- 9 13.4	-0.1818	0.5128	0.2515	+32	-52
κ Piscium	4.7	4.33	27.5	+ 0 41.9	20 51.0	+10 39.1	-0.8329	0.5079	0.2537	- 2	-89
9 Piscium	6.6	4.33	27.5	0 31.8	21 1.2	+10 49.1	-0.6448	0.5079	0.2537	+ 9	-84
15 Piscium	6.6	+4.33	+28.0	+ 0 45.1	8 1 22.6	- 8 57.0	+0.2575	0.5073	+0.2531	+57	-28
16 Piscium	5.8	4.33	28.2	1 32.3	1 51.9	- 8 28.5	-0.4643	0.5073	0.2531	+18	-70
λ Piscium	4.5	4.35	28.2	1 13.3	4 51.8	- 5 33.8	-0.6352	0.5070	0.2525	+84	- 9
19 Piscium	4.9	4.35	28.6	2 55.4	7 10.0	- 3 19.5	-0.6159	0.5064	0.2520	+10	-82
22 Piscium	5.0	4.36	28.7	2 21.9	10 7.1	- 0 27.5	+0.7273	0.5067	0.2512	+90	- 4
d Piscium	5.3	+4.41	+29.6	+ 7 37.6	9 1 18.9	- 9 41.9	-1.1858	0.5070	+0.2447	-26	-82
45 Piscium	6.9	4.42	29.6	7 7.8	4 0.8	- 7 4.6	+0.0128	0.5070	0.2431	+43	-40
75 Piscium	6.0	4.51	29.5	12 24.7	10 1 29.3	-10 13.4	-0.6825	0.5110	0.2265	+ 6	-77
η Piscium	3.7	4.56	28.9	14 49.4	14 22.9	+ 2 17.5	-0.4845	0.5145	0.2129	+17	-64
101 Piscium	6.3	4.57	28.7	14 8.6	16 35.6	+ 4 26.2	+0.7293	0.5152	0.2104	+90	+ 1
103 Piscium	6.8	+4.59	+28.3	+16 6.6	18 21.5	+ 6 9.0	-1.0587	0.5158	+0.2083	-18	-74
105 Piscium	6.3	4.59	28.4	15 53.5	18 34.4	+ 6 21.6	-0.7732	0.5158	0.2080	0	-69
3 Arietis	6.0	4.61	28.1	16 54.3	22 5.4	+ 9 46.2	-1.1614	0.5170	0.2037	-27	-73
4 Arietis	5.7	4.61	28.1	16 27.0	22 54.5	+10 33.9	-0.4976	0.5172	0.2026	+15	-64
ϵ Arietis	5.7	4.63	27.7	17 19.3	11 3 33.0	- 8 55.9	-0.5291	0.5190	0.1965	+14	-64
15 Arietis	5.7	+4.66	+27.0	+19 1.3	10 12.5	- 2 28.5	-1.1224	0.5207	+0.1871	-24	-71
B. A. C. 686	7.2	4.67	26.7	19 8.4	11 49.6	- 0 54.4	-0.9513	0.5217	0.1847	-12	-71
θ Arietis	5.7	4.68	26.5	19 25.9	13 57.2	+ 1 9.3	-0.8845	0.5226	0.1815	- 7	-71
23 Arietis	7.5	4.68	26.4	19 13.4	14 27.8	+ 1 39.0	-0.5628	0.5227	0.1808	+12	-64
26 Arietis	6.0	4.69	25.8	19 24.3	20 9.1	+ 7 9.7	+0.2401	0.5248	0.1718	+56	-19
μ Arietis	6.0	+4.73	+24.9	+19 34.8	12 1 54.9	-11 15.3	+1.0121	0.5270	+0.1624	+90	+28
ϵ Arietis	4.6	4.75	23.6	20 56.1	10 5.5	- 3 20.0	+0.7851	0.5301	0.1481	+90	+12
66 Arietis	6.0	4.78	21.2	22 27.3	18 0 3.6	+10 11.3	+0.9916	0.5350	0.1217	+90	+29
7 Tauri	6.0	4.82	20.3	24 7.5	2 52.2	-11 5.5	-0.5247	0.5362	0.1161	+13	-55
9 Tauri	7.0	4.81	20.2	22 52.5	4 5.0	- 9 55.1	+0.9993	0.5365	0.1137	+90	+30
11 Tauri	6.7	+4.85	+19.4	+25 0.1	5 50.2	- 8 13.3	-1.1618	0.5366	+0.1100	-32	-65
γ Pleiadum	6.3	4.83	19.2	23 58.2	7 45.0	- 6 22.3	+0.1882	0.5376	0.1061	+54	-15
17 Tauri	4.3	4.82	19.3	23 47.7	7 47.2	- 6 20.2	+0.3872	0.5376	0.1061	+67	- 5
18 Tauri	6.3	4.84	19.1	24 31.3	7 54.5	- 6 13.1	-0.4055	0.5376	0.1058	+20	-47
19 Tauri	5.0	4.83	19.2	24 9.0	7 56.1	- 6 11.6	+0.0096	0.5376	0.1058	+43	-24
20 Tauri	5.0	+4.83	+19.1	+24 3.1	8 13.7	- 5 54.5	+0.1495	0.5377	+0.1052	+51	-17
21 Tauri	7.0	4.83	19.1	24 14.3	8 15.7	- 5 52.6	-0.0543	0.5377	0.1051	+39	-27
22 Tauri	7.0	4.83	19.1	24 12.7	8 19.8	- 5 48.6	-0.0179	0.5377	0.1049	+41	-25
23 Tauri	4.7	4.82	19.2	23 38.0	8 28.2	- 5 40.5	+0.6389	0.5377	0.1047	+90	+ 9
η Tauri	3.1	4.82	19.1	23 47.5	9 0.6	- 5 9.2	+0.5186	0.5380	0.1035	+78	+ 3
26 Tauri	7.0	+4.82	+19.0	+23 33.0	9 42.0	- 4 29.1	+0.8586	0.5382	+0.1021	+90	+24
27 Tauri	4.0	4.82	18.9	23 44.6	9 47.9	- 4 23.4	+0.6531	0.5382	0.1019	+90	+10
28 Tauri	6.2	4.82	18.9	23 49.6	9 48.4	- 4 23.0	+0.5615	0.5382	0.1019	+82	+ 5
B. A. C. 1192	6.0	4.85	18.4	25 16.4	10 18.4	- 3 53.9	-0.9917	0.5383	0.1008	-17	-65
36 Tauri	6.0	4.81	17.6	23 49.6	16 53.2	+ 2 27.9	+1.2303	0.5402	0.0869	+90	+53
ρ Tauri	6.0	+4.86	+16.4	+26 13.0	19 50.5	+ 5 19.3	-1.1741	0.5410	+0.0805	-35	-64
χ Tauri	5.7	4.83	15.5	25 23.4	14 1 17.1	+10 35.0	+0.1484	0.5423	+0.0685	+51	-13
125 Tauri	6.0	4.66	7.3	25 50.5	15 12 28.0	- 3 25.4	+0.6428	0.5460	-0.0126	+90	+18
139 Tauri	5.3	4.60	5.3	25 56.5	20 45.4	+ 4 35.2	+0.3456	0.5457	0.0319	+64	+ 1
ϵ Geminorum	3.2	4.36	+ 0.5	25 14.0	16 17 43.9	+ 0 51.1	-0.0481	0.5429	0.0798	+40	-24
37 Geminorum	6.3	+4.31	- 0.8	+25 30.2	22 57.5	+ 5 54.2	-0.7920	0.5419	-0.0913	- 4	-64

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

OCTOBER.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels	
Name.	Mag.	Red'ns from 1897.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	γ	α'	γ'	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
ω Geminorum	5.7	+4.24	-1.0	+24 21.7	17 2 15.4	+9 5.5	+0.1497	0.5411	-0.0984	+51	-16
48 Geminorum	6.0	4.18	2.1	24 18.0	6 53.9	-10 25.4	-0.2627	0.5401	0.1083	+27	-39
52 Geminorum	6.3	4.19	2.7	25 3.8	7 55.6	-9 25.7	-1.2105	0.5398	0.1105	-38	-65
58 Geminorum	6.3	4.09	2.8	23 8.5	12 2.9	-5 26.6	+0.4184	0.5389	0.1191	+69	-5
84 Geminorum	6.8	3.90	5.6	22 35.8	18 1 54.7	+7 57.9	-0.8307	0.5353	0.1466	-5	-67
μ^1 Cancri	5.7	+3.79	-6.7	+21 52.7	8 54.6	-9 15.8	-1.1201	0.5334	-0.1597	-26	-68
B. A. C. 2788	6.0	3.68	7.3	21 4.2	14 55.4	-3 26.6	-1.2350	0.5320	0.1705	-38	-69
δ^1 Cancri	6.0	3.62	6.9	18 39.6	16 24.9	-2 0.1	+1.1105	0.5316	0.1731	+90	+32
θ Cancri	5.7	3.56	7.6	18 26.4	20 22.0	+1 49.4	+0.6492	0.5307	0.1798	+89	+1
35 Cancri	6.3	3.56	8.5	19 56.5	22 8.0	+3 32.0	-1.2874	0.5302	0.1827	-44	-70
B. A. C. 2899	7.2	+3.54	-8.7	+19 37.5	23 19.2	+4 40.9	-1.1630	0.5300	-0.1847	-29	-70
δ Cancri	4.0	3.47	8.9	18 31.8	2 40.2	+7 55.5	-0.6140	0.5292	0.1901	+9	-68
δ^1 Cancri	5.7	3.34	8.8	15 42.9	8 47.7	-10 8.7	+1.2081	0.5280	0.1995	+90	+37
δ^2 Cancri	6.0	3.35	8.9	15 58.6	8 57.3	-9 59.3	+0.8962	0.5280	0.1998	+90	+13
68 Cancri	7.5	3.34	9.8	17 28.9	10 56.9	-8 3.5	-1.1146	0.5276	0.2028	-23	-73
π^1 Cancri	6.3	+3.21	-9.7	+15 24.5	16 9.3	-3 1.0	+0.0240	0.5268	-0.2102	+44	-35
π^2 Cancri	6.0	3.22	10.1	15 22.0	17 33.8	-1 39.1	-0.2290	0.5265	0.2121	+30	-48
18 Leonis	6.0	2.96	11.4	12 16.9	20 8 52.4	-10 49.2	-0.3601	0.5251	0.2313	+23	-59
19 Leonis	7.0	2.94	11.4	12 2.5	9 23.4	-10 19.3	-0.2276	0.5250	0.2319	+30	-51
21 Leonis	6.8	2.93	11.6	12 19.2	11 3.1	-8 42.7	-0.9068	0.5250	0.2337	-7	-78
A Leonis	4.7	+2.82	-12.2	+10 29.9	19 28.6	-0 32.9	-0.9980	0.5251	-0.2424	-13	-79
43 Leonis	6.5	2.69	12.2	7 3.7	21 2 55.6	+6 40.1	+0.7576	0.5255	0.2489	+90	-1
48 Leonis	5.5	2.63	12.9	7 28.8	8 42.7	-11 43.7	-1.1293	0.5263	0.2533	-22	-83
34 Sextantis	6.7	2.56	12.2	4 7.1	12 33.8	-7 59.8	+1.3702	0.5269	0.2559	+90	+48
35 ¹ Sextantis	6.2	2.57	12.6	5 17.0	12 53.9	-7 40.4	+0.0796	0.5269	0.2562	+46	-37
δ Leonis	5.3	+2.49	-13.2	+4 10.0	21 17.5	+0 27.4	-0.9377	0.5289	-0.2607	-8	-86
ρ^1 Leonis	6.2	2.42	13.1	2 30.7	22 0 23.7	+3 27.7	-0.0482	0.5294	0.2619	+40	-45
76 Leonis	6.3	2.39	13.6	+2 12.7	6 10.2	+9 3.1	-1.2583	0.5316	0.2640	-32	-88
ν Leonis	4.4	2.30	13.6	-0 15.5	14 47.1	-6 36.7	-1.0179	0.5350	0.2655	-13	-90
η Virginis	5.7	2.10	13.8	8 53.3	28 17 5.4	-5 10.8	+0.7486	0.5496	0.2587	+79	-3
NEW MOON.											
42 Libræ	5.7	+2.41	-13.3	-23 29.2	26 20 38.2	-4 31.3	-0.3829	0.6055	-0.1234	+5	-66
δ Scorpii	5.3	2.46	12.9	25 26.5	27 0 33.3	-0 46.1	+1.0782	0.6074	0.1118	+65	+24
A ¹ Scorpii	5.2	2.47	12.8	25 1.4	1 31.8	+0 10.0	+0.5590	0.6079	0.1090	+56	-11
B. A. C. 5253	5.8	2.47	12.8	24 13.8	1 38.8	+0 16.7	-0.2346	0.6079	0.1087	+11	-56
B. A. C. 5254	5.8	+2.47	-13.0	-23 40.5	1 40.0	+0 17.8	-0.7828	0.6079	-0.1087	-18	-90
3 Scorpii	6.7	2.47	12.7	24 56.5	1 55.0	+0 32.1	+0.4370	0.6080	0.1079	+48	-17
π Scorpii	6.3	2.50	12.7	25 49.3	3 26.5	+1 59.8	+1.1412	0.6086	0.1033	+64	+31
B. A. C. 5314	5.7	2.52	12.5	25 34.9	5 5.5	+3 34.5	+0.7393	0.6092	0.0982	+64	0
B. A. C. 5347	6.0	2.55	12.5	26 3.2	6 49.4	+5 14.0	+1.0384	0.6098	0.0929	+64	+22
σ Scorpii	3.4	+2.60	-11.7	-25 20.9	11 35.8	+9 48.1	-0.0625	0.6112	-0.0779	+18	-46
α Scorpii	1.2	2.65	11.5	26 12.4	14 34.0	-11 21.4	+0.5660	0.6118	0.0684	+53	+10
22 Scorpii	5.5	2.64	11.3	24 53.5	14 52.7	-11 3.6	+0.7519	0.6118	0.0674	-20	-90
25 Scorpii	7.0	2.74	10.5	25 20.6	20 54.0	-5 17.8	-0.6546	0.6124	0.0480	-16	-90
31 Ophiuchi	6.7	2.85	9.6	25 30.0	28 3 21.9	+0 53.3	-0.7415	0.6123	0.0268	-23	-90
B. A. C. 5800	7.5	+2.90	-9.4	-26 51.8	6 47.1	+4 9.6	+0.5347	0.6118	-0.0156	+47	-12
A Ophiuchi	4.9	2.87	10.1	26 27.2	7 13.1	+4 34.5	+0.1221	0.6117	0.0142	+22	-35
B. A. C. 5813	6.8	2.87	10.0	26 24.1	7 32.2	+4 52.7	+0.0654	0.6116	0.0131	+19	-38
38 Ophiuchi	6.7	2.90	9.1	26 31.1	8 1.9	+5 21.1	+0.1756	0.6116	-0.0115	+25	-32
γ Sagittarii	2.9	3.27	4.1	25 28.8	29 9 58.1	+6 11.2	-0.0816	0.5998	+0.0702	+16	-47
25 Sagittarii	6.3	+3.29	-3.0	-24 18.1	12 28.6	+8 35.4	-1.0789	0.5980	+0.0776	-41	-90
B. A. C. 6369	6.2	3.35	-2.4	25 6.9	16 22.7	-11 40.0	+0.0616	0.5952	0.0888	+25	-39
B. A. C. 6607	5.9	3.48	+1.4	22 35.7	30 6 24.2	+1 47.9	-0.9726	0.5834	0.1261	-28	-90
χ^1 Sagittarii	5.6	3.54	1.3	24 9.8	8 19.0	+3 38.2	+0.8639	0.5816	0.1308	+66	+8
53 Sagittarii	6.7	3.60	2.7	23 39.7	14 7.3	+9 13.1	+1.1568	0.5764	0.1445	+66	+31
B. A. C. 6727	6.2	+3.60	+2.7	-23 39.8	14 14.5	+9 20.0	+1.1766	0.5762	+0.1448	+66	+33

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

OCTOBER.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1897.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
σ Capricorni	5.6	+3.70	+ 7.6	-19 26.3	81 6 48.0	+ 1 16.6	-0.4499	0.5603	+0.1788	+ 9	-70
π Capricorni	5.1	3.72	8.6	18 32.8	10 15.2	+ 4 36.5	-0.7388	0.5572	0.1849	- 7	-90
ρ Capricorni	5.3	3.72	8.8	18 9.1	10 56.0	+ 5 15.8	-1.0198	0.5566	0.1861	-24	-90
B. A. C. 7044	7.0	3.72	8.7	18 12.7	10 59.7	+ 5 19.4	-0.9471	0.5565	0.1862	-19	-90
ϕ Capricorni	6.2	3.74	8.6	18 55.3	11 22.4	+ 5 41.3	-0.1438	0.5561	0.1868	+25	-50
ν Capricorni	5.7	+3.77	+ 9.5	-18 29.9	15 52.0	+10 1.4	+0.2748	0.5519	+0.1942	+48	-27
B. A. C. 7263	5.9	+3.80	+11.6	-16 25.5	23 50.2	- 6 16.8	-0.2736	0.5449	+0.2060	+20	-58

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29 Capricorni	5.7	+3.85	+13.5	-15 35.7	1 8 12.7	+ 1 49.0	+0.6373	0.5379	+0.2168	+72	- 8
18 Aquarii	5.7	3.86	14.9	13 19.0	12 13.0	+ 5 41.4	-0.8623	0.5347	0.2213	- 9	-90
λ Capricorni	5.7	3.92	17.6	11 50.2	22 59.6	- 7 52.6	+0.0296	0.5268	0.2317	+40	-41
50 Capricorni	6.9	3.93	17.4	12 9.9	23 4.2	- 7 48.1	+0.3925	0.5267	0.2318	+61	-22
36 Aquarii	6.3	+3.96	+20.4	- 8 41.2	2 10 22.7	+ 3 9.3	-0.6006	0.5196	+0.2401	+ 9	-81
θ Aquarii	4.4	3.99	20.9	8 17.4	14 6.2	+ 6 46.0	-0.1217	0.5176	0.2422	+34	-49
B. A. C. 7774	6.4	4.00	20.6	9 32.9	14 7.2	+ 6 47.0	+1.2129	0.5176	0.2422	+80	+29
ρ Aquarii	5.6	4.00	21.1	8 19.9	15 48.9	+ 8 25.6	+0.3383	0.5167	0.2431	+60	-24
κ Aquarii	5.2	4.01	23.4	4 45.2	8 0 50.8	- 6 48.6	-1.2485	0.5125	0.2469	-34	-90
B. A. C. 7951	6.7	+4.05	+24.8	- 4 45.4	6 4.9	- 1 43.7	+0.0507	0.5105	+0.2486	+44	-40
κ Piscium	4.7	4.17	27.1	+ 0 41.9	4 2 42.8	- 5 41.7	-0.6393	0.5049	0.2501	+ 9	-84
9 Piscium	6.6	4.20	27.1	0 33.8	2 53.1	- 5 31.6	-0.4511	0.5049	0.2501	+19	-69
15 Piscium	6.6	4.19	27.7	0 45.1	7 16.7	- 1 15.5	+0.4442	0.5043	0.2495	+68	-19
16 Piscium	5.8	4.19	28.0	1 32.3	7 46.4	- 0 46.6	-0.2801	0.5042	0.2494	+28	-58
λ Piscium	4.5	+4.21	+27.9	+ 1 13.2	10 47.8	+ 2 9.6	+0.8157	0.5040	+0.2488	+90	+ 1
19 Piscium	4.9	4.22	28.6	2 55.4	13 7.2	+ 4 25.1	-0.4449	0.5038	0.2482	+19	-68
22 Piscium	5.0	4.25	28.6	2 21.9	16 5.9	+ 7 18.6	+0.8901	0.5037	0.2474	+90	+ 6
d Piscium	5.3	4.37	30.1	7 37.6	5 7 26.1	- 1 47.3	-1.0598	0.5043	0.2409	-17	-82
45 Piscium	6.9	4.38	30.0	7 7.8	10 9.6	+ 0 51.6	+0.1340	0.5046	0.2394	+49	-34
75 Piscium	6.0	+4.57	+30.7	+12 24.7	6 7 48.7	- 2 6.4	-0.6157	0.5091	+0.2231	+10	-74
η Piscium	3.7	4.70	30.3	14 49.4	20 47.4	+10 29.5	-0.4502	0.5132	0.2099	+18	-62
101 Piscium	6.3	4.72	30.0	14 8.6	23 0.8	-11 21.0	+0.7614	0.5140	0.2073	+90	- 4
103 Piscium	6.8	4.75	30.1	16 6.7	7 0 47.3	- 9 37.7	-1.0370	0.5146	0.2053	-17	-74
105 Piscium	6.3	4.75	29.9	15 53.5	1 0.3	- 9 25.0	-0.7511	0.5147	0.2050	+ 2	-72
3 Arietis	6.0	+4.79	+29.9	+16 54.3	4 32.5	- 5 59.2	-1.1494	0.5159	+0.2007	-26	-73
4 Arietis	5.7	4.80	29.8	16 27.1	5 21.7	- 5 11.4	-0.4859	0.5163	0.1997	+16	-63
ϵ Arietis	5.7	4.84	29.4	17 19.4	10 1.5	- 0 40.0	-0.5293	0.5181	0.1937	+14	-64
15 Arietis	5.7	4.92	28.8	19 1.3	16 42.6	+ 5 49.0	-1.1410	0.5208	0.1845	-26	-71
B. A. C. 686	7.2	4.93	28.7	19 8.4	18 20.1	+ 7 23.6	-0.9733	0.5215	0.1821	-13	-71
θ Arietis	5.7	+4.95	+28.5	+19 25.9	20 28.0	+ 9 27.6	-0.9119	0.5224	+0.1790	- 9	-71
23 Arietis	7.5	4.95	28.3	19 13.5	20 58.8	+ 9 47.4	-0.5903	0.5226	0.1782	+10	-66
26 Arietis	6.0	5.00	27.6	19 24.3	8 2 41.0	- 8 30.9	+0.2006	0.5263	0.1695	+54	-21
μ Arietis	6.0	5.07	26.7	19 34.8	8 27.6	- 2 55.0	+0.9605	0.5275	0.1600	+90	+22
ϵ Arietis	4.6	5.14	25.4	20 56.1	16 38.9	+ 5 0.9	+0.7134	0.5309	0.1460	+90	+ 9
66 Arietis	6.0	+5.25	+22.8	+22 27.3	9 6 37.3	- 5 27.5	+0.8881	0.5364	+0.1197	+90	+22
7 Tauri	6.0	5.32	22.2	24 7.5	9 25.8	- 2 44.5	-0.6371	0.5374	0.1141	+ 6	-62
9 Tauri	7.0	5.31	21.8	22 52.6	10 38.7	- 1 34.0	+0.8867	0.5379	0.1117	+90	+23
11 Tauri	6.7	5.37	21.4	25 0.1	12 23.8	+ 0 7.7	-1.2818	0.5385	0.1082	-53	-65
g Pleiadum	6.3	5.35	21.0	23 58.3	14 18.6	+ 1 58.8	+0.0665	0.5391	0.1042	+46	-21
17 Tauri	4.3	+5.35	+21.0	+23 47.7	14 20.8	+ 2 0.9	+0.2658	0.5391	+0.1042	+58	-11
18 Tauri	6.3	5.37	21.0	24 31.3	14 28.1	+ 2 8.0	-0.5285	0.5392	0.1039	+12	-54
19 Tauri	5.0	5.36	21.0	24 9.0	14 29.7	+ 2 9.5	-0.1126	0.5392	0.1039	+36	-30
20 Tauri	5.0	5.36	20.9	24 3.1	14 47.3	+ 2 26.5	+0.0268	0.5393	0.1033	+44	-23
21 Tauri	7.0	5.36	20.9	24 14.3	14 49.4	+ 2 28.5	-0.1773	0.5393	0.1032	+32	-34
22 Tauri	7.0	+5.36	+20.9	+24 12.7	14 53.4	+ 2 32.4	-0.1408	0.5393	+0.1030	+34	-32

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

NOVEMBER.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1897.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	X	Y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
23 Tauri	4.7	+5.35	+20.9	+23 38.0	9 15 1.8	+ 2 40.6	+0.5133	0.5393	+0.1028	+77	+ 2
7 Tauri	3.1	5.36	20.8	23 47.5	15 34.2	+ 3 11.9	+0.3949	0.5396	0.1016	+67	- 4
26 Tauri	7.0	5.36	20.7	23 32.8	16 15.5	+ 3 51.9	+0.7369	0.5398	0.1002	+90	+15
27 Tauri	4.0	5.36	20.6	23 44.6	16 21.4	+ 3 57.6	+0.5279	0.5399	0.1000	+78	+ 3
28 Tauri	6.2	5.36	20.6	23 49.6	16 22.0	+ 3 58.1	+0.4361	0.5399	0.1000	+70	- 2
B. A. C. 1192	6.0	+5.40	+20.5	+25 16.4	16 51.8	+ 4 27.0	-1.1210	0.5400	+0.0990	-29	-65
36 Tauri	6.0	5.38	19.1	23 49.6	23 26.5	+10 48.7	+1.0913	0.5420	0.0850	+90	+40
χ Tauri	5.7	5.46	16.9	25 23.4	10 7 50.1	- 5 4.4	-0.0093	0.5441	+0.0667	+42	-19
125 Tauri	6.0	5.45	7.3	25 50.5	11 19 2.3	+ 4 56.4	+0.4242	0.5472	-0.0142	+70	+ 7
139 Tauri	5.3	5.42	+ 5.0	25 56.5	18 3 21.1	-11 1.6	+0.1164	0.5465	0.0336	+49	-11
ϵ Geminorum	3.2	+5.26	- 0.8	+25 14.0	18 0 26.9	+ 9 21.7	-0.3113	0.5424	-0.0809	+24	-39
37 Geminorum	6.3	5.21	2.3	25 30.2	5 43.3	- 9 32.5	-1.0661	0.5409	0.0922	-24	-64
ω Geminorum	5.7	5.14	2.9	24 21.7	9 3.1	- 6 19.2	-0.1233	0.5399	0.0993	+35	-30
48 Geminorum	6.0	5.10	4.1	24 18.0	13 44.6	- 1 47.0	-0.5435	0.5384	0.1090	+12	-56
58 Geminorum	6.3	4.98	5.1	23 8.5	18 57.3	+ 3 15.4	+0.1364	0.5368	0.1195	+50	-19
84 Geminorum	6.8	+4.82	- 8.5	+22 35.8	14 9 1.3	- 7 7.9	-0.1135	0.5320	-0.1464	+35	-33
δ^1 Cancr	6.0	4.53	10.6	18 39.6	23 47.6	+ 7 10.2	+0.8141	0.5270	0.1719	+90	+11
θ Cancr	5.7	4.47	11.4	18 26.3	18 3 49.8	+11 4.9	+0.3462	0.5257	0.1784	+63	-15
δ Cancr	4.0	4.39	13.0	18 31.8	10 16.5	- 6 40.4	-0.9329	0.5237	0.1882	-11	-71
δ^2 Cancr	5.7	4.22	13.0	15 42.8	16 32.8	- 0 35.8	+0.9078	0.5216	0.1974	+90	+14
α^2 Cancr	6.0	+4.24	-13.1	+15 58.5	16 42.6	- 0 26.3	+0.5931	0.5215	-0.1975	+82	- 4
π^1 Cancr	6.3	4.10	14.1	15 24.4	16 0 5.8	+ 6 43.2	-0.2903	0.5202	0.2074	+27	-52
π^2 Cancr	6.0	4.11	14.5	15 21.9	1 32.5	+ 8 7.4	-0.5455	0.5198	0.2093	+13	-67
18 Leonis	6.0	3.82	16.0	12 16.8	17 16.9	- 0 37.0	-0.6742	0.5174	0.2274	+ 6	-77
19 Leonis	7.0	3.80	15.9	12 2.4	17 48.8	- 0 6.1	-0.5396	0.5174	0.2280	+14	-70
21 Leonis	6.8	+3.79	-16.3	+12 19.1	19 31.4	+ 1 33.4	-1.2269	0.5172	-0.2297	-31	-78
A Leonis	4.7	3.64	16.9	10 29.9	17 4 12.2	+ 9 58.6	-1.3138	0.5169	0.2378	-40	-79
43 Leonis	6.5	3.51	16.9	7 3.6	11 53.1	- 6 34.4	+0.4728	0.5182	0.2440	+71	-16
34 Sextantis	6.7	3.35	16.9	4 7.0	21 49.3	+ 3 3.7	+1.1057	0.5183	0.2506	+90	+20
35 ¹ Sextantis	6.2	3.36	17.4	5 16.9	22 10.0	+ 3 23.7	-0.2025	0.5184	0.2508	+31	-53
ν^1 Leonis	6.2	+3.18	-17.7	+ 2 30.6	18 10 1.2	- 9 6.8	-0.3149	0.5215	-0.2565	+26	-60
ν Leonis	4.4	3.01	17.8	- 0 15.6	19 0 50.3	+ 5 14.6	-1.5697	0.5268	0.2597	-34	-90
γ Virginis	5.7	2.73	16.9	8 53.3	20 3 48.2	+ 7 20.2	+0.5801	0.5432	0.2533	+75	-12
75 Virginis	6.0	2.58	15.9	14 50.3	21 5 53.1	+ 8 30.5	+0.2038	0.5654	0.2289	+47	-31
83 Virginis	6.0	2.57	15.8	15 39.9	10 46.4	-10 46.9	-0.0764	0.5701	0.2220	+32	-46
85 Virginis	6.5	+2.56	-15.8	-15 15.3	11 13.9	-10 20.5	-0.5793	0.5706	-0.2213	+ 5	-80
B. A. C. 5800	7.5	2.87	8.0	26 51.8	24 17 8.2	- 7 41.1	+0.6479	0.6212	0.0140	+56	- 5
A Ophiuchi	4.9	2.84	8.9	26 27.2	17 33.4	- 7 17.0	+0.2413	0.6211	0.0116	+28	-28
B. A. C. 5813	6.8	2.84	8.8	26 24.0	17 52.0	- 6 59.3	+0.1861	0.6211	0.0111	+25	-31
38 Ophiuchi	6.7	+2.87	- 7.8	-26 31.1	18 20.8	- 6 31.8	+0.3029	0.6211	-0.0094	+32	-25
63 Ophiuchi	6.6	2.98	5.3	24 52.1	25 7 34.8	+ 6 7.1	-1.1518	0.6162	+0.0351	-50	-90
λ Sagittarii	2.9	3.09	3.2	25 28.8	19 30.0	- 6 28.8	+0.0971	0.6111	0.0734	+25	-37
B. A. C. 6304	7.0	3.08	2.4	24 11.1	21 26.9	- 4 36.9	-1.0341	0.6097	0.0794	-37	-90
24 Sagittarii	5.9	3.08	2.3	24 6.6	21 41.3	- 4 23.1	-1.0873	0.6096	0.0802	-41	-90
25 Sagittarii	6.3	+3.09	- 2.3	-24 18.1	21 55.6	- 4 9.4	-0.8790	0.6094	+0.0809	-26	-90
26 Sagittarii	6.6	3.11	1.6	23 55.8	20 0 37.2	- 1 34.8	-1.0180	0.6076	0.0890	-35	-90
B. A. C. 6369	6.2	3.14	- 1.6	25 6.8	1 41.8	- 0 32.9	+0.2504	0.6066	0.0922	+36	-28
B. A. C. 6607	5.9	3.21	+ 1.5	22 35.6	15 14.8	-11 33.7	-0.7406	0.5947	0.1300	-13	-90
χ^3 Sagittarii	5.6	3.26	1.5	24 9.8	17 5.7	- 9 47.3	+1.0678	0.5928	0.1348	+66	+23
σ Capricorni	5.6	+3.37	+ 7.2	-19 26.3	27 14 49.2	+11 5.6	-0.1905	0.5707	+0.1825	+22	-53
π Capricorni	5.1	3.38	7.9	18 32.8	18 9.8	- 9 41.1	-0.4697	0.5671	0.1890	+ 8	-72
ρ Capricorni	5.3	3.38	8.2	18 9.1	18 49.3	- 9 3.1	-0.7437	0.5665	0.1902	- 7	-90
B. A. C. 7044	7.0	3.38	8.1	18 12.7	18 52.9	- 8 59.6	-0.6737	0.5664	0.1903	- 3	-90
ν Capricorni	6.2	3.40	8.0	18 55.3	19 14.9	- 8 38.4	+0.1154	0.5663	0.1909	+39	-36
ν Capricorni	5.7	+3.42	+ 9.1	-18 29.9	23 35.8	- 4 27.0	+0.5335	0.5615	+0.1982	+63	-13

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

NOVEMBER.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels	
Name.	Mag.	Red'ns from 1870.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	s'	y'	N.	S.
		Δα	Δδ								
B. A. C. 7263	5.9	+3.45	+11.0	+16 25.5	28 7 19.5	+ 3 0.2	+0.0021	0.5537	+0.2099	+35	-42
29 Capricorni	5.7	3.51	12.7	15 35.8	15 27.4	+10 51.1	+0.9061	0.5459	0.2203	+74	+ 8
18 Aquarii	5.7	3.50	14.0	13 19.0	19 21.3	- 9 22.7	-0.5687	0.5423	0.2246	+ 8	-79
λ Capricorni	5.7	3.57	16.3	11 50.2	20 5 51.5	+ 0 46.9	+0.3163	0.5333	0.2345	+56	-25
50 Capricorni	6.9	3.58	16.0	12 9.9	5 56.0	+ 0 51.3	+0.6746	0.5332	0.2346	+77	- 6
36 Aquarii	6.3	+3.62	+18.9	+ 8 41.2	16 59.3	+11 33.5	+0.3047	0.5249	+0.2422	+24	-59
θ Aquarii	4.4	3.65	19.4	8 17.4	20 38.3	- 8 54.3	+0.1687	0.5224	0.2441	+49	-33
ρ Aquarii	5.6	3.67	19.6	8 20.0	22 19.2	- 7 16.5	+0.6243	0.5214	0.2449	+79	- 9
κ Aquarii	5.2	3.69	21.9	+ 4 45.2	30 7 11.6	+ 1 19.7	-0.9489	0.5162	0.2481	-10	-90
B. A. C. 7951	6.7	+3.73	+22.2	+ 4 45.4	12 20.9	+ 6 19.7	+0.3364	0.5136	+0.2493	+60	-25

DECEMBER.

κ Piscium	4.7	+3.92	+25.8	+ 0 41.9	1 8 44.7	+ 2 7.7	-0.3647	0.5062	+0.2496	+23	-63
9 Piscium	6.6	+3.92	+25.9	+ 0 33.8	8 54.9	+ 2 17.7	-0.1778	0.5062	+0.2496	+33	-52
15 Piscium	6.6	3.93	26.4	0 45.1	13 16.5	+ 6 31.8	+0.7081	0.5052	0.2487	+90	- 3
16 Piscium	5.8	3.93	26.8	1 32.3	13 45.8	+ 7 0.3	-0.0139	0.5051	0.2486	+41	-43
λ Piscium	4.5	3.96	26.6	1 13.2	16 46.2	+ 9 55.5	+1.0741	0.5046	0.2478	+90	+17
19 Piscium	4.9	3.98	27.4	2 55.4	19 4.7	-11 50.0	-0.1836	0.5043	0.2472	+32	-52
22 Piscium	5.0	+4.01	+27.3	+ 2 21.9	22 2.6	- 8 57.2	+1.1484	0.5039	+0.2461	+90	+23
δ Piscium	5.3	4.17	29.4	7 37.6	8 13 20.0	+ 5 54.2	-0.8235	0.5035	0.2389	- 2	-82
45 Piscium	6.9	4.19	29.2	7 7.8	16 3.2	+ 8 32.6	+0.3628	0.5037	0.2373	+63	-22
75 Piscium	6.0	4.45	30.5	12 24.7	8 13 43.6	+ 5 35.9	-0.4246	0.5073	0.2205	+20	-62
7 Piscium	3.7	4.63	30.4	14 49.4	4 2 44.6	- 5 45.8	-0.2856	0.5112	0.2071	+27	-52
101 Piscium	6.3	+4.67	+30.1	+14 8.6	4 58.5	- 3 35.9	+0.9220	0.5120	+0.2046	+90	+10
103 Piscium	6.8	4.69	30.5	16 6.7	6 45.4	- 1 52.1	-0.8809	0.5126	0.2025	- 6	-74
105 Piscium	6.3	4.71	30.4	15 53.5	6 58.4	- 1 39.5	-0.5954	0.5126	0.2022	+11	-70
3 Arietis	6.0	4.76	30.4	16 54.3	10 31.4	+ 1 47.2	-1.0016	0.5138	0.1980	-15	-73
4 Arietis	5.7	4.77	30.2	16 27.1	11 20.8	+ 2 35.2	-0.3392	0.5143	0.1969	+24	-54
ι Arietis	5.7	+4.83	+29.9	+17 19.4	16 1.7	+ 7 7.7	-0.3925	0.5161	+0.1909	+21	-56
15 Arietis	5.7	4.95	29.5	19 1.3	22 44.3	-10 21.8	-1.0195	0.5189	0.1817	-17	-71
B. A. C. 686	7.2	4.97	29.4	19 8.4	8 0 22.3	- 8 46.7	-0.8548	0.5196	0.1794	- 5	-71
θ Arietis	5.7	5.00	29.2	19 26.0	2 30.7	- 6 42.3	-0.7980	0.5206	0.1763	- 2	-71
23 Arietis	7.5	5.00	29.0	19 13.5	3 1.5	- 6 12.4	-0.4775	0.5208	0.1755	+16	-59
26 Arietis	6.0	+5.08	+28.3	+19 24.4	8 45.1	- 0 39.4	+0.3020	0.5233	+0.1668	+60	-16
μ Arietis	6.0	5.17	27.4	19 34.8	14 32.9	+ 4 57.7	+1.0500	0.5259	0.1575	+90	+29
ε Arietis	4.6	5.29	26.3	20 56.1	22 45.8	-11 4.8	+0.7850	0.5296	0.1435	+90	+13
66 Arietis	6.0	5.49	23.7	22 27.3	6 12 46.2	+ 2 28.9	+0.9295	0.5357	0.1174	+90	+25
7 Tauri	6.0	5.57	23.5	24 7.5	15 35.1	+ 5 12.4	-0.6028	0.5369	0.1119	+ 8	-60
9 Tauri	7.0	+5.57	+22.9	+22 52.6	16 48.1	+ 6 23.0	+0.9173	0.5374	+0.1095	+90	+25
11 Tauri	6.7	5.65	22.8	25 0.1	18 33.3	+ 8 4.7	-1.2544	0.5380	0.1060	-46	-65
g Pleiadum	6.3	5.64	22.2	23 58.3	20 28.3	+ 9 56.0	+0.0911	0.5388	0.1021	+48	-19
17 Tauri	4.3	5.63	22.2	23 47.7	20 30.5	+ 9 58.1	+0.2904	0.5388	0.1020	+60	- 9
18 Tauri	6.3	5.65	22.2	24 31.3	20 37.8	+10 5.2	-0.5047	0.5388	0.1018	+14	-53
19 Tauri	5.0	+5.64	+22.2	+24 9.0	20 39.5	+10 6.8	-0.0884	0.5389	+0.1017	+37	-29
20 Tauri	5.0	5.64	22.1	24 3.1	20 57.0	+10 23.7	+0.0508	0.5390	0.1011	+45	-21
21 Tauri	7.0	5.65	22.1	24 14.3	20 59.0	+10 25.6	-0.1541	0.5390	0.1010	+33	-32
22 Tauri	7.0	5.65	22.1	24 12.7	21 3.1	+10 29.7	-0.1146	0.5390	0.1009	+36	-30
23 Tauri	4.7	5.63	22.0	23 38.0	21 11.5	+10 37.8	+0.5398	0.5391	0.1006	+79	+ 4
7 Tauri	3.1	+5.64	+21.9	+23 47.6	21 43.9	+11 9.1	+0.4169	0.5393	+0.0995	+69	- 3
26 Tauri	7.0	5.64	21.7	23 32.8	22 25.3	+11 49.2	+0.7578	0.5396	0.0981	+90	+16
27 Tauri	4.0	5.65	21.7	23 44.7	22 31.2	+11 54.9	+0.5483	0.5396	0.0979	+80	+ 5
28 Tauri	6.2	5.65	21.7	23 49.7	22 31.8	+11 55.4	+0.4566	0.5396	0.0979	+72	0
B. A. C. 1192	6.0	5.70	21.6	25 16.4	23 1.7	-11 35.6	-1.1025	0.5398	0.0968	-27	-65
36 Tauri	6.0	+5.72	+20.0	+23 49.7	7 5 36.6	- 5 13.8	+1.0977	0.5420	+0.0830	+90	+41

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

DECEMBER.

THE STAR'S				AT CONJUNCTION IN R. A.						Limiting Parallels	
Name.	Mag.	Red'ns from 1897.0.		Apparent Declination.	Washington Mean Time.	Hour Angle <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
χ Tauri	5.7	+5.85	+18.0	+25 23.5	7 14 0.2	+ 2 53.1	-0.0210	0.5447	+0.0647	+41	-21
118 Tauri	5.7	6.01	9.1	25 4.2	8 20 25.1	+ 8 16.5	+1.2523	0.5492	-0.0051	+90	+62
125 Tauri	6.0	6.06	7.5	25 50.5	9 1 8.7	-11 9.7	+0.3441	0.5491	0.0161	+64	+2
139 Tauri	5.3	6.07	+4.9	25 56.5	9 26.2	-3 9.1	+0.0184	0.5484	0.0354	+43	-16
ϵ Geminorum	3.2	5.99	-1.7	25 14.0	10 6 28.6	-6 49.2	-0.4430	0.5445	0.0828	+17	-47
37 Geminorum	6.3	+5.98	-3.4	+25 30.2	11 44.3	-1 44.1	-1.2072	0.5430	-0.0941	-39	-64
ω Geminorum	5.7	5.92	4.2	24 21.6	15 3.8	+1 28.9	-0.2689	0.5419	0.1012	+27	-38
48 Geminorum	6.0	5.89	5.6	24 17.9	19 45.0	+6 0.7	-0.6973	0.5403	0.1109	+3	-65
δ Geminorum	3.5	5.79	6.4	22 10.2	23 24.0	+9 32.5	+1.2339	0.5391	0.1182	+90	+51
58 Geminorum	6.3	5.81	7.0	23 8.5	11 0 57.4	+11 3.0	-0.0249	0.5385	0.1213	+41	-27
85 Geminorum	6.0	+5.57	-10.8	+20 9.2	16 21.3	+1 57.0	+1.1675	0.5325	-0.1503	+90	+39
α Cancri	6.0	5.40	14.0	18 39.5	12 5 51.4	-8 58.5	+0.6163	0.5271	0.1731	+85	0
θ Cancri	5.7	5.35	15.0	18 26.3	9 54.9	-5 2.6	+0.1420	0.5255	0.1794	+50	-25
δ Cancri	4.0	5.27	16.8	18 31.7	16 24.3	+1 14.8	-1.1508	0.5231	0.1890	-27	-71
54 Cancri	6.3	5.15	16.5	15 43.7	19 37.2	+4 21.7	-0.7770	0.5219	0.1935	+90	+47
α Cancri	5.7	+5.13	-17.2	+15 42.8	22 43.8	+7 22.7	+0.6041	0.5208	-0.1977	+90	+1
α Cancri	6.0	5.14	17.4	15 58.3	22 53.7	+7 32.3	+0.3795	0.5207	0.1979	+65	-15
π Cancri	6.3	5.00	18.6	15 24.3	13 6 21.5	-9 13.6	-0.5181	0.5184	0.2074	+14	-66
π Cancri	6.0	5.02	19.0	15 21.8	7 49.3	-7 48.3	-0.7770	0.5179	0.2092	0	-69
18 Leonis	6.0	4.75	21.1	12 16.7	23 47.6	+7 41.3	-0.9190	0.5139	0.2263	-10	-78
19 Leonis	7.0	+4.73	-21.1	+12 2.3	14 0 20.1	+8 12.8	-0.7837	0.5138	-0.2268	-2	-78
43 Leonis	6.5	4.43	22.3	7 3.5	18 46.6	+2 6.6	+0.2327	0.5118	0.2416	+55	-29
34 Sextantis	6.7	4.26	22.4	4 6.9	15 4 57.4	+11 59.4	+0.8752	0.5119	0.2474	+90	+5
35 Sextantis	6.2	4.27	22.9	5 16.8	5 18.6	-11 40.1	-0.4501	0.5119	0.2476	+21	-68
ρ Leonis	6.2	4.08	23.5	+2 30.5	17 29.8	+0 9.6	-0.5614	0.5136	0.2523	+13	-77
B. A. C. 4006	6.1	+3.82	-22.6	-4 46.0	16 15 51.2	-2 9.6	+1.3771	0.5210	-0.2543	+85	+48
7 Virginis	5.7	3.60	22.1	8 53.4	17 12 41.6	-5 58.5	+0.3859	0.5329	0.2474	+62	-22
69 Virginis	5.0	3.40	19.7	15 26.7	18 13 19.3	-6 10.2	+1.1952	0.5529	0.2261	+75	+27
75 Virginis	6.0	3.39	19.8	14 50.3	15 42.5	-3 52.0	+0.0446	0.5551	0.2232	+39	-40
83 Virginis	6.0	3.37	19.4	15 40.0	20 45.7	+1 0.5	-0.2310	0.5598	0.2165	+24	-55
85 Virginis	6.5	+3.38	-19.5	-15 15.3	21 14.2	+1 28.0	-0.7480	0.5603	-0.2158	-4	-90
87 Virginis	5.8	3.38	19.0	17 21.1	22 0.3	+2 12.4	+1.1954	0.5611	0.2147	+73	+31
89 Virginis	5.4	3.35	18.9	17 37.6	23 3.7	+3 13.5	+1.2476	0.5621	0.2132	+72	+36
B. A. C. 4722	5.8	3.30	18.0	17 43.5	19 9 47.4	-10 26.5	-0.8493	0.5744	0.1961	-12	-90
B. A. C. 4923	7.3	3.32	17.4	20 57.2	20 2 26.2	+6 33.7	-0.6091	0.5894	0.1611	-3	-85
42 Libræ	5.7	+3.22	-13.3	-23 29.2	18 52.7	-2 40.2	-0.4120	0.6042	-0.1187	+4	-69
δ Scorpii	5.3	3.23	12.6	25 26.5	22 48.3	+1 5.4	+1.0692	0.6073	0.1074	+65	+24
A ¹ Scorpii	5.2	3.23	12.4	25 1.4	23 46.8	+2 1.5	+0.5538	0.6080	0.1045	+55	-11
B. A. C. 5253	5.8	3.23	12.4	24 13.8	23 53.9	+2 8.3	-0.2398	0.6081	0.1042	+11	-56
B. A. C. 5254	5.8	3.21	12.5	23 40.5	23 55.1	+2 9.5	-0.7880	0.6081	0.1041	-19	-90
3 Scorpii	6.7	+3.23	-12.3	-24 56.5	21 0 10.0	+2 23.6	+0.4357	0.6083	-0.1034	+48	-18
π Scorpii	6.3	3.23	12.2	25 49.2	1 41.4	+3 51.1	+1.1435	0.6098	0.0988	+64	+32
B. A. C. 5314	5.7	3.23	11.8	25 34.9	3 20.1	+5 25.6	+0.7488	0.6105	0.0939	+64	+1
B. A. C. 5347	6.0	3.25	11.3	26 3.2	5 3.6	+7 4.7	+1.0545	0.6116	0.0886	+64	+23
σ Scorpii	3.4	3.23	10.8	25 20.9	9 47.9	+11 36.7	-0.0226	0.6145	0.0738	+19	+43
α Scorpii	1.2	+3.24	-10.3	-26 12.4	12 44.3	-9 34.6	+0.6155	0.6161	-0.0644	+57	-7
22 Scorpii	5.5	3.22	10.3	24 53.5	13 2.7	-9 17.1	-0.6936	0.6162	0.0635	-17	-90
25 Scorpii	7.0	3.24	9.0	25 20.6	18 58.7	-3 36.6	+0.5695	0.6187	0.0441	-12	-83
31 Ophiuchi	6.7	3.24	7.9	25 30.0	22 1 18.7	+2 26.5	-0.6273	0.6205	0.0229	-17	-90
B. A. C. 5800	7.5	3.25	-7.2	26 51.8	4 39.0	+5 38.0	+0.6455	0.6210	-0.0116	+56	-5
NEW MOON.											
B. A. C. 6607	5.9	+3.26	+2.0	-22 35.6	24 2 16.8	+1 16.6	-0.6496	0.6020	+0.1332	-8	-90
MERCURY				22 16.4	11 40.6	+10 17.2	+0.4004	0.5725	0.1440	+50	-20
σ Capricorni	5.6	3.27	7.1	19 26.3	25 1 16.2	-0 39.2	-0.0669	0.5800	0.1872	+28	-46
π Capricorni	5.1	3.28	7.9	18 32.8	4 31.0	+2 28.2	-0.3376	0.5767	0.1934	+15	-62
ρ Capricorni	5.3	+3.27	+8.1	-18 9.1	5 9.4	+3 5.1	-0.6083	0.5760	+0.1946	+1	-84

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

DECEMBER.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1897.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	γ	α'	γ'	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
B. A. C. 7044	7.0	+3.28	+ 8.0	-18 12.7	25 5 12.9	+ 3 8.6	-0.5376	0.5760	+0.1947	+ 5	-77
o Capricorni	6.2	3.29	8.0	18 55.3	5 34.2	+ 3 29.0	+0.2411	0.5757	0.1954	+46	-29
v Capricorni	5.7	3.30	8.9	18 29.9	9 47.3	+ 7 32.6	+0.6592	0.5713	0.2029	+70	- 6
B. A. C. 7263	5.9	3.30	10.6	16 25.5	17 16.7	- 9 14.5	+0.1454	0.5636	0.2148	+43	-34
29 Capricorni	5.7	3.32	12.1	15 35.8	26 1 9.0	- 1 39.0	+1.0455	0.5560	0.2253	+74	+17
18 Aquarii	5.7	+3.31	+13.2	-13 19.0	4 55.2	+ 1 59.2	-0.4027	0.5522	+0.2297	+16	-66
λ Capricorni	5.7	3.34	15.2	11 50.2	15 4.7	+11 48.0	+0.4794	0.5432	0.2396	+66	-17
50 Capricorni	6.9	3.35	15.0	12 9.9	15 9.0	+11 52.2	+0.8320	0.5432	0.2397	+78	+ 3
36 Aquarii	6.3	3.38	17.1	8 41.2	27 1 50.5	- 1 47.4	-0.1226	0.5344	0.2471	+34	-49
θ Aquarii	4.4	3.40	18.0	8 17.5	5 22.4	+ 1 37.7	+0.3460	0.5318	0.2489	+62	-24
ρ Aquarii	5.6	+3.41	+18.2	- 8 20.0	6 59.9	+ 3 12.0	+0.7951	0.5306	+0.2497	+82	0
B. A. C. 7804	6.2	3.41	18.5	7 42.9	8 37.2	+ 4 46.3	+0.5569	0.5295	0.2503	+73	-14
κ Aquarii	5.2	3.42	20.2	4 45.2	15 35.4	+11 31.4	-0.7491	0.5247	0.2525	+ 2	-90
B. A. C. 7951	6.7	3.46	20.5	- 4 45.4	20 35.3	- 7 38.0	+0.5195	0.5216	0.2536	+73	-15
κ Piscium	4.7	3.61	24.0	+ 0 41.9	28 16 24.3	+11 35.0	-0.1682	0.5130	0.2528	+33	-51
9 Piscium	6.6	+3.61	+24.1	+ 0 33.8	16 34.2	+11 44.6	+0.0161	0.5129	+0.2527	+43	-41
15 Piscium	6.6	3.65	24.6	0 45.0	20 49.2	- 8 7.9	+0.8910	0.5115	0.2517	+90	+ 6
16 Piscium	5.8	3.65	24.9	1 32.2	21 17.8	- 7 40.1	+0.1782	0.5114	0.2515	+52	-33
λ Piscium	4.5	3.68	24.8	1 13.2	29 0 13.8	- 4 49.4	+1.2529	0.5106	0.2506	+90	+32
19 Piscium	4.9	3.70	25.6	2 55.3	2 29.0	- 2 38.1	+0.0099	0.5101	0.2497	+42	-41
22 Piscium	5.0	+3.73	+25.6	+ 2 21.9	5 22.7	+ 0 10.5	+1.3252	0.5094	+0.2486	+90	+41
d Piscium	5.3	3.88	27.8	7 37.6	20 21.3	- 9 17.1	-0.6298	0.5076	0.2404	+ 9	-79
45 Piscium	6.9	3.92	27.5	7 7.8	23 1.6	- 6 41.4	+0.5438	0.5077	0.2388	+76	-12
75 Piscium	6.0	4.21	29.3	12 24.7	30 20 23.2	- 9 57.0	-0.2511	0.5092	0.2206	+29	-52
η Piscium	3.7	4.42	29.3	14 49.4	31 9 16.7	+ 2 33.7	-0.1242	0.5120	0.2066	+35	-43
101 Piscium	6.3	+4.45	+29.3	+14 8.6	11 29.6	+ 4 42.7	+1.0747	0.5126	+0.2040	+90	+24
103 Piscium	6.8	4.49	29.6	16 6.7	13 15.7	+ 6 25.7	-0.7204	0.5131	0.2018	+ 3	-74
105 Piscium	6.3	4.49	29.5	15 53.5	13 28.7	+ 6 38.3	-0.4364	0.5132	0.2016	+19	-60
3 Arietis	6.0	4.57	29.5	16 54.3	17 0.2	+10 3.5	-0.8444	0.5142	0.1972	- 4	-73
4 Arietis	5.7	+4.58	+29.3	+16 27.1	17 49.3	+10 51.1	-0.1861	0.5145	+0.1961	+32	-45

OCCULTATIONS VISIBLE AT WASHINGTON DURING THE YEAR 1897.												
Date.	THE STAR'S		IMMERSION.				EMERSION.				Duration of Oc- culation.	
			Washington.		Angle from		Washington.		Angle from			
	Name.	Mag.	Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.		
Jan. 13	18 Tauri	6.3	h m 2 15	h m 6 42	° 67	° 113	h m 3 46	h m 8 12	° 251	° 245	h m 1 30	
18	δ Cancri	4.0	14 29	18 33	80	27	15 13	19 16	330	280	0 43	
20	A Leonis *	4.7	2 19	6 16	85	38	3 5	7 3	315	266	0 47	
21	δ Leonis *	5.3	3 34	7 28	65	114	4 9	8 2	343	34	0 34	
28	3 Sagittarii *	4-6	10 15	13 40	78	138	11 3	14 27	295	352	0 47	
29	σ Sagittarii *	2.3	12 42	16 3	32	86	13 13	16 34	327	23	0 31	
Feb. 13	B. A. C. 2363	7.3	9 31	11 52	85	29	10 36	12 57	320	261	1 5	
14	7 Cancri	6.3	5 10	7 29	69	124	6 14	8 33	326	11	1 4	
14	μ Cancri	5.7	7 42	10 1	103	116	9 3	11 21	310	276	1 20	
15	68 Cancri	7.5	7 11	9 26	108	148	8 31	10 45	311	324	1 19	
15	π* Cancri †	6.0	15 31	17 44	138	87	16 17	18 30	273	224	0 46	
16	21 Leonis	6.8	5 1	7 12	138	191	6 1	8 12	271	322	1 0	
26	μ Sagittarii *	5-7	13 20	14 50	112	164	14 13	15 43	238	289	0 53	
Mar. 14	35 Cancri	6.3	7 47	8 15	38	61	8 0	8 28	19	36	0 13	
14	δ Cancri	4.0	13 28	13 55	82	27	14 15	14 42	332	278	0 47	
15	18 Leonis *	6.0	17 38	18 1	79	35	18 16	18 39	327	286	0 38	
15	19 Leonis *	7.0	18 3	18 25	107	65	18 47	19 10	298	261	0 45	
22	π Scorpii *	3.4	8 28	8 25	185	244	8 38	8 35	208	266	0 10	
22	B. A. C. 5347	6.0	11 31	11 27	72	118	12 20	12 17	328	8	0 50	
23	43 Ophiuchi	5.8	17 8	16 59	71	72	18 27	18 18	289	274	1 19	
25	ψ Sagittarii *	5.4	12 6	11 51	51	108	12 50	12 34	304	1	0 43	
26	4 Capricorni †	6.1	14 51	14 31	88	139	15 57	15 37	248	293	1 6	
29	67 Aquarii *	6.4	15 9	14 37	142	193	15 24	14 52	175	227	0 15	
30	12 Piscium *	6.8	16 11	15 36	113	163	16 48	16 12	197	248	0 36	
31	22 Piscium *	5.0	7 52	7 14	11	330	8 20	7 41	305	261	0 27	
April 5	8 Pleiadum	6.3	8 50	7 51	143	87	9 26	8 27	210	156	0 35	
5	19 Tauri	5.0	8 49	7 51	94	38	9 52	8 53	259	205	1 3	
5	21 Tauri	7.0	9 11	8 13	76	20	10 12	9 13	278	222	1 0	
5	20 Tauri	5.0	9 13	8 14	121	65	10 3	9 5	233	178	0 51	
5	22 Tauri	7.0	9 15	8 16	82	27	10 15	9 17	272	216	1 1	
11	π1 Cancri	6.3	13 49	12 26	163	109	14 32	13 9	255	202	0 43	
11	π* Cancri	6.0	14 54	13 31	93	40	15 43	14 20	320	269	0 49	
16	75 Virginis	6.0	10 28	8 46	108	142	11 32	9 50	321	346	1 4	
18	δ Scorpii	5.3	17 57	16 6	45	18	18 41	16 49	331	297	0 43	
21	σ Sagittarii *	2.3	12 29	10 28	142	198	13 4	11 2	217	269	0 34	
May 3	χ Tauri	5.7	10 5	7 17	108	53	11 4	8 15	265	215	0 58	
8	δ Cancri	4.0	8 5	4 58	78	95	9 8	6 0	344	323	1 2	
16	B. A. C. 5314 *	5.7	8 55	5 16	113	171	9 44	6 4	280	335	0 48	
16	B. A. C. 5347 †	6.0	10 46	7 6	143	193	11 31	7 51	254	300	0 45	
June 1	139 Tauri	5.3	12 42	7 59	118	68	13 32	8 49	263	218	0 50	
6	43 Leonis *	6.5	18 13	13 9	153	103	18 50	13 46	255	212	0 37	
12	δ Scorpii	5.3	19 0	13 32	66	30	19 58	14 30	304	260	0 58	
12	π Scorpii *	3.4	22 15	16 47	126	70	22 57	17 29	237	179	0 42	
17	21 Capricorni *	6.4	14 42	8 56	96	149	15 37	9 51	233	283	0 55	
17	θ Capricorni	4.1	17 17	11 31	118	159	18 4	12 17	196	231	0 46	
July 6	9 Virginis *	5.7	18 31	11 29	41	350	18 49	11 47	3	311	0 18	
16	B. A. C. 7774 *	6.4	14 25	6 45	54	105	15 15	7 34	266	313	0 49	
18	22 Piscium *	5.0	15 51	8 2	26	73	16 29	8 41	287	336	0 39	
22	ε Arietis *	4.6	17 36	9 32	129	161	18 3	9 58	198	234	0 26	
26	ε Geminorum	3.2	23 30	15 9	71	119	24 22	16 2	288	340	0 53	

NOTE.—The angles of position are counted from the north point and vertex of the moon's limb, toward the east.

* Whole occultation below the horizon of Washington.

† Immersion below the horizon of Washington.

‡ Emerison below the horizon of Washington.

NOTE.—The angles of position are counted from the north point and vertex of the moon's limb, toward the east.

* Whole occultation below the horizon of Washington.

† Immersion below the horizon of Washington.

‡ Emersion below the horizon of Washington.

OCCULTATIONS VISIBLE AT WASHINGTON DURING THE YEAR 1897.

Date.	THE STAR'S		IMMERISION.				EMERSION.				Duration of Oc- cultation.
			Washington.		Angle from		Washington.		Angle from		
	Name.	Mag.	Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.	
			h m	h m	°	°	h m	h m	°	°	h m
Aug. 6	4 Scorpii	6.3	14 14	5 11	140	160	15 21	6 17	257	263	1 6
6	π Scorpii	3.4	16 3	7 0	54	52	16 58	7 54	330	316	0 54
6	B. A. C. 5347 *	6.0	20 49	11 45	56	8	21 38	12 34	305	253	0 49
8	B. A. C. 6194	5.1	21 33	12 21	89	52	22 35	13 23	239	194	1 2
9	ψ Sagittarii	5.4	18 41	9 26	119	125	19 36	10 21	205	199	0 55
9	χ Sagittarii *	5.6	0 14	14 57	40	351	1 3	15 47	277	225	0 50
14	λ Piscium	4.5	21 58	12 23	42	67	23 18	13 43	238	266	1 21
19	γ Pleiadum	6.3	1 6	15 10	113	169	2 6	16 10	202	249	1 0
19	19 Tauri	5.0	1 19	15 24	78	133	2 46	16 50	238	272	1 26
19	21 Tauri	7.0	1 50	15 55	74	125	3 20	17 25	246	260	1 30
19	20 Tauri	5.0	1 51	15 55	119	169	2 49	16 53	199	232	0 58
19	22 Tauri	7.0	1 54	15 58	83	132	3 23	17 27	236	249	1 28
Sept. 2	δ Scorpii *	5.3	21 19	10 28	100	48	22 14	11 23	264	208	0 55
4	3 Sagittarii	4.6	16 15	5 18	135	152	17 14	6 17	226	231	0 59
18	139 Tauri	5.3	23 9	11 17	100	150	24 5	12 12	248	303	0 55
Oct. 19	ω Geminorum	5.7	5 23	17 25	150	198	6 25	18 27	234	256	1 2
3	53 Sagittarii	6.7	20 47	7 55	93	77	21 54	9 2	217	189	1 7
6	B. A. C. 7774	6.4	20 20	7 16	74	100	21 37	8 33	213	222	1 17
8	22 Piscium	5.0	22 14	9 2	60	87	23 36	10 24	221	224	1 22
12	ε Arietis	4.6	21 34	8 7	82	137	22 36	9 8	228	284	1 1
13	23 Tauri †	4.7	20 19	6 48	37	84	21 2	7 31	288	339	0 43
13	26 Tauri	7.0	21 16	7 45	101	153	22 7	8 35	221	276	0 50
13	27 Tauri	4.0	21 25	7 55	60	112	22 23	8 52	261	317	0 57
13	28 Tauri	6.2	21 30	7 59	41	93	22 23	8 52	281	337	0 53
15	125 Tauri	6.0	0 13	10 33	129	186	1 16	11 36	214	273	1 3
17	58 Geminorum	6.3	23 58	10 10	82	129	24 53	11 5	286	338	0 55
27	π Scorpii	3.4	18 31	4 5	157	125	19 5	4 39	214	178	0 34
27	B. A. C. 5314 †	5.7	20 15	5 48	81	37	21 14	6 47	282	230	0 59
28	B. A. C. 5800 *	7.5	22 8	7 38	62	13	23 1	8 31	283	233	0 53
Nov. 1	29 Capricorni	5.7	23 17	8 30	73	46	24 25	9 38	221	182	1 8
5	45 Piscium	6.9	1 43	10 40	3	335	2 37	11 34	284	245	0 54
8	μ Arietis	6.0	21 52	6 38	128	184	22 21	7 7	179	235	0 29
9	66 Arietis †	6.0	20 1	4 44	86	133	20 53	5 36	237	289	0 52
9	23 Tauri	4.7	7 13	15 54	143	85	7 53	16 34	208	150	0 40
9	7 Tauri	3.1	7 40	16 19	103	45	8 48	17 28	250	193	1 9
9	27 Tauri	4.0	8 39	17 20	121	64	9 33	18 14	235	181	0 54
9	28 Tauri	6.2	8 35	17 16	100	43	9 39	18 19	256	202	1 3
15	α Cancrī	6.0	8 5	16 22	175	197	8 55	17 12	245	245	0 50
17	43 Leonis *	6.5	2 4	10 14	133	178	2 50	11 0	267	316	0 46
29	50 Capricorni	6.9	22 22	5 46	59	49	23 39	7 3	229	182	1 17
Dec. 30	B. A. C. 7951 *	6.7	6 4	13 23	83	33	6 51	14 10	230	183	0 47
5	26 Arietis	6.0	0 48	7 48	40	82	2 10	9 10	260	268	1 22
12	θ Cancrī	5.7	1 32	8 4	50	99	2 7	8 40	334	26	0 36
17	γ Virginis *	5.7	4 51	11 3	145	196	5 34	11 46	264	316	0 43
18	75 Virginis †	6.0	7 49	13 56	48	99	8 8	14 15	8	58	0 19
21	B. A. C. 5314 *	5.7	22 16	4 13	118	63	23 1	4 58	243	186	0 45
22	B. A. C. 5800 *	7.5	23 38	5 31	117	60	24 18	6 11	230	171	0 40
25	α Capricorni †	6.2	0 56	6 37	28	348	1 42	7 23	279	227	0 46
27	θ Aquarii	4.4	0 21	5 54	30	0	1 27	7 0	258	218	1 6
27	B. A. C. 7804 *	6.2	4 12	9 45	136	85	4 27	10 0	170	118	0 15

NOTE.—The angles of position are counted from the north point and vertex of the moon's limb, toward the east.

* Whole occultation below the horizon of Washington. † Immersion below the horizon of Washington.

‡ Emergence below the horizon of Washington.

PREDICTION OF OCCULTATIONS.

DOWNES'S TABLE GIVING VALUES OF τ .																							
FOR COMPUTING THE TIME AND HOUR-ANGLE OF APPARENT CONJUNCTION.																							
A	Lat. 72°			Lat. 66°			Lat. 60°			Lat. 54°			Lat. 48°			Lat. 42°			Lat. 36°				
	τ'			τ'			τ'			τ'			τ'			τ'			τ'				
	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50		
h	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
10	2	2	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	6	5	6	7		
20	3	3	4	4	5	5	5	6	7	6	7	9	8	9	11	9	10	12	11	12	14		
30	5	5	6	6	7	8	8	9	11	10	11	13	12	13	16	14	16	18	16	18	22		
40	6	7	8	8	9	11	11	12	14	13	15	17	16	18	21	18	21	24	21	24	29		
50	7	8	10	10	11	13	13	15	17	16	19	21	19	22	26	22	26	30	26	30	36		
1	0	9	10	11	12	14	16	18	21	19	22	26	23	26	31	26	31	36	30	35	42		
10	10	12	13	14	16	18	18	21	24	22	26	30	26	30	36	31	35	42	35	40	48		
20	12	13	15	16	18	21	21	23	27	25	29	34	30	34	40	35	40	47	39	45	54		
30	13	15	17	18	20	23	23	26	30	28	32	37	33	38	45	39	44	52	43	50	59		
40	14	16	18	20	22	25	25	29	33	31	35	41	36	42	49	42	48	57	47	54	64		
50	16	18	20	21	24	28	27	31	36	34	38	44	39	45	53	45	52	61	51	58	68		
2	0	17	19	22	23	26	30	33	39	36	41	47	42	48	56	48	55	65	54	62	72		
10	18	20	23	25	28	32	31	36	41	38	43	50	45	51	59	51	59	68	57	66	76		
20	19	22	24	26	30	34	33	38	43	40	46	53	47	54	62	54	62	71	60	69	80		
30	20	23	26	28	31	36	35	40	45	42	48	55	50	56	65	57	64	74	63	72	83		
40	21	24	27	29	33	37	37	42	47	44	50	58	52	59	68	59	67	77	65	74	86		
50	22	25	28	30	34	39	38	43	49	46	52	60	54	61	70	61	69	79	68	76	88		
3	0	23	26	30	31	35	40	45	51	48	54	62	56	63	72	63	71	81	70	79	90		
10	24	27	31	33	36	42	41	46	53	49	56	63	57	65	74	65	73	83	72	81	92		
20	25	28	32	34	38	43	42	47	54	51	57	65	59	66	75	66	74	85	73	82	93		
30	26	29	33	35	39	44	43	49	55	52	58	66	60	67	77	68	76	86	74	83	95		
40	26	29	33	36	40	45	44	50	56	53	59	67	61	69	78	69	77	87	75	84	96		
50	27	30	34	36	41	46	45	51	57	54	60	68	62	70	79	70	78	88	76	85	96		
4	0	28	31	35	37	41	47	52	58	55	61	69	63	70	79	71	79	89	77	86	97		
10	28	31	35	38	42	47	47	52	59	56	62	70	64	71	80	71	79	89	78	86	97		
20	29	32	36	38	42	48	47	53	59	56	62	70	64	71	80	72	80	89	78	87	97		
30	29	32	36	39	43	48	48	53	60	57	63	71	65	72	81	72	80	90	79	87	97		
40	29	33	37	39	43	49	48	53	60	57	63	71	65	72	81	72	80	89	79	87	97		
50	30	33	37	39	44	49	48	54	60	57	63	71	65	72	81	72	80	89	79	87	96		
5	0	30	33	37	39	44	49	54	60	57	63	71	65	72	80	72	80	89	78	86	95		
10	30	33	37	40	44	49	49	54	60	57	63	71	65	72	80	72	79	88	78	86	95		
20	30	33	37	40	44	49	49	54	60	57	63	71	65	71	79	72	79	88	78	85	94		
30	30	33	37	40	44	49	49	54	60	57	63	70	64	71	79	71	78	87	77	85	93		
40	30	33	37	39	44	49	48	53	59	56	62	70	64	70	78	70	77	86	76	84	91		
50	30	33	37	39	43	48	48	53	59	56	61	69	63	70	77	70	77	85	75	83	90		
6	0	30	33	37	39	43	48	52	58	55	61	68	63	69	76	69	76	84	74	82	89		
10	30	33	37	39	43	47	47	52	58	55	60	67	62	68	75	68	75	82	73	80	87		
20	29	32	36	38	42	47	47	51	57	54	60	66	61	67	74	67	73	81	72	79	85		
30	29	32	36	38	42	46	46	51	56	53	59	65	60	66	73	66	72	80	71	78	84		
40	29	32	35	37	41	46	45	50	55	53	58	64	59	65	71	65	71	78	70	76	82		
50	28	31	35	37	40	45	45	49	54	52	57	62	58	63	70	63	69	76	68	74	80		
7	0	28	31	34	36	40	44	48	53	51	55	61	57	62	68	62	68	75	67	73	78		
10	27	30	34	35	39	43	43	47	52	50	54	60	56	61	67	61	66	73	65	71	76		
20	27	30	33	35	38	42	42	46	51	48	53	58	54	59	65	59	65	71	64	68	74		
30	26	29	32	34	37	41	41	45	49	47	52	57	53	58	63	58	63	69	62	67	71		
40	26	28	31	33	36	40	40	44	48	46	50	55	51	56	62	56	61	67	61	66	71		
50	25	27	31	32	35	39	39	42	47	45	49	53	50	54	60	54	59	65	59	64	69		
8	0	24	27	30	31	34	38	41	45	43	47	52	48	52	58	53	57	63	57	63	69		
10	24	26	29	30	33	37	36	40	44	42	46	50	47	51	56	52	55	60	55	60	66		
20	23	25	28	29	32	35	35	38	42	40	44	48	45	49	54	49	54	59	54	59	64		
30	22	24	27	28	31	34	34	37	41	39	42	46	43	47	52	47	52	57	52	57	62		
40	21	23	26	27	30	33	33	35	39	37	41	44	41	45	49	45	49	53	49	53	57		
50	20	22	25	26	28	31	31	34	37	36	39	42	40	43	47	43	47	51	47	51	55		
9	0	19	21	24	25	27	30	32	35	34	37	40	37	40	43	37	40	43	37	40	43		
10	18	20	22	24	26	28	28	31	34	32	35	38	35	38	41	35	38	41	35	38	41		
20	18	19	21	22	24	27	27	29	32	31	33	36	33	36	39	33	36	39	33	36	39		
30	16	18	20	21	23	25	25	27	30	29	31	34	31	34	37	31	34	37	31	34	37		
40	15	17	19	20	22	24	24	26	28	27	29	32	29	31	34	29	31	34	29	31	34		

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FOR WASHINGTON MEAN NOON.									
Date.	k	i	θ	L	Date.	k	i	θ	L
Jan. 1	0.746	60.6	352.6	65.4	July 5	0.872	41.9	180.7	65.9
6	0.583	80.5	348.1	63.1	10	0.963	22.1	194.0	67.0
11	0.380	107.4	343.4	56.0	15	0.998	4.9	270.9	61.9
16	0.129	137.9	336.0	28.1	20	0.977	17.4	355.7	52.7
21	0.010	168.4	289.4	2.5	25	0.928	31.0	7.6	44.2
26	0.063	151.0	189.9	12.5	30	0.871	42.1	13.8	37.9
31	0.212	125.2	179.6	32.5	Aug. 4	0.813	51.2	18.0	33.9
Feb. 5	0.349	107.6	175.3	37.6	9	0.762	58.3	21.1	31.9
10	0.473	90.8	171.6	37.0	14	0.698	66.6	23.6	30.6
15	0.590	79.6	168.1	35.4	19	0.637	74.1	25.5	30.6
20	0.667	70.5	164.5	32.4	24	0.570	82.0	27.1	31.5
25	0.728	62.8	161.1	30.3	29	0.491	91.1	28.7	32.6
Mar. 2	0.780	56.0	157.6	29.1	Sept. 3	0.395	102.1	30.5	33.2
7	0.825	49.4	154.4	29.1	8	0.281	116.0	32.9	31.0
12	0.868	42.7	151.4	29.3	13	0.153	134.0	37.2	22.6
17	0.908	35.3	148.2	32.8	18	0.052	153.7	48.4	9.7
22	0.948	26.4	145.2	37.2	23	0.008	169.7	158.4	1.7
27	0.981	15.7	139.7	43.9	28	0.107	141.7	199.5	21.7
Apr. 1	0.999	3.4	88.7	53.1	Oct. 3	0.318	111.3	205.9	52.3
6	0.981	15.7	341.4	66.1	8	0.556	83.5	208.5	66.6
11	0.916	33.7	336.4	70.6	13	0.755	59.3	210.2	63.4
16	0.766	57.8	336.4	68.0	18	0.873	41.7	211.1	52.1
21	0.598	78.7	337.2	59.1	23	0.943	27.6	211.1	42.1
26	0.434	97.6	339.2	47.1	28	0.979	16.7	210.8	34.6
May 1	0.283	115.7	341.0	34.5	Nov. 2	0.996	7.2	210.1	29.7
6	0.170	131.3	342.2	23.5	7	1.000	0.8	200.4	26.6
11	0.077	147.7	343.8	12.0	12	0.997	5.8	23.6	24.9
16	0.018	164.5	348.6	3.1	17	0.989	11.7	21.7	24.4
21	0.001	176.7	100.4	0.1	22	0.976	17.8	19.0	25.1
26	0.027	161.2	148.2	4.3	27	0.955	24.4	15.3	26.8
31	0.081	145.8	153.0	11.7	Dec. 2	0.926	31.7	11.5	30.0
June 5	0.166	131.8	155.1	21.1	7	0.881	40.4	7.3	35.0
10	0.260	118.8	157.6	28.5	12	0.812	51.4	3.0	42.2
15	0.362	106.1	160.3	35.0	17	0.705	65.8	358.7	51.4
20	0.470	92.8	163.8	41.3	22	0.543	85.0	354.6	59.0
25	0.602	78.2	168.2	49.7	27	0.323	110.7	350.4	53.0
30	0.737	61.7	173.8	58.2	32	0.101	143.0	343.4	22.9
35	0.872	41.9	180.7	65.9					

NOTATION.

k , the ratio of the illuminated portion of the apparent disk to the entire apparent disk considered as the superficies of a circle.

i , the angle between the sun and earth, as seen from the planet.

θ , the angle which the line joining the cusps, or extremities of the illuminated portion, makes with the meridian.

L , the brilliancy of the disk. The unit of L is the amount of light received by an eye from a circular disk with the same albedo as the planet, subtending an angular radius of one second of arc, situated at distance unity from the sun, and illuminated by the latter as the mean disk of the planet is illuminated.

FOR WASHINGTON MEAN NOON.

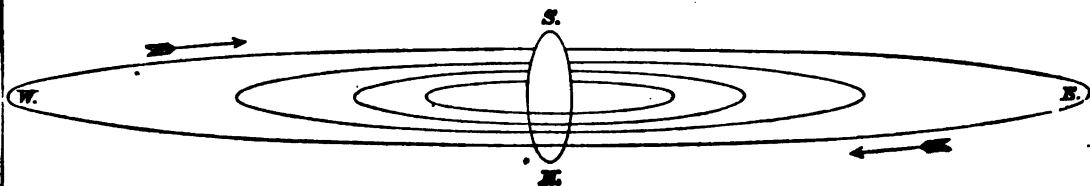
Date.	<i>k</i>	<i>i</i>	<i>θ</i>	<i>L</i>	Date.	<i>k</i>	<i>i</i>	<i>θ</i>	<i>L</i>
Jan. 1	0.706	65.6	342.5	93.5	May 26	0.190	128.3	158.5	174.5
6	0.691	67.5	341.0	98.1	31	0.236	121.8	158.1	183.3
11	0.671	70.0	339.7	102.4	June 5	0.279	116.2	158.1	184.5
16	0.653	72.2	338.6	107.6	10	0.319	111.2	158.4	180.5
21	0.634	74.5	337.7	113.0	15	0.357	106.5	159.1	174.0
26	0.613	77.0	337.0	119.0	20	0.392	102.5	160.0	165.8
31	0.591	79.5	336.5	125.5	25	0.425	98.6	161.1	157.2
Feb. 5	0.569	82.1	336.1	132.5	30	0.456	95.1	162.6	148.6
10	0.544	84.9	335.8	140.1	July 5	0.485	91.7	164.1	140.6
15	0.519	87.9	335.7	148.2	10	0.513	88.5	165.8	132.8
20	0.492	91.0	335.6	156.8	15	0.538	85.6	167.8	125.4
25	0.463	94.3	335.6	165.9	20	0.563	82.8	169.9	118.7
Mar. 2	0.432	97.8	335.7	175.1	25	0.586	80.0	172.2	112.7
7	0.399	101.7	335.8	184.2	30	0.609	77.4	174.6	107.2
12	0.363	105.9	335.8	192.9	Aug. 4	0.630	74.9	177.1	102.1
17	0.325	110.5	335.7	200.2	9	0.651	72.4	179.7	97.6
22	0.284	115.6	335.3	202.0	14	0.671	70.0	182.3	93.4
27	0.239	121.4	334.6	199.0	19	0.690	67.6	184.9	89.6
Apr. 1	0.193	127.8	333.3	187.9	24	0.709	65.3	187.6	86.6
3	0.174	130.6	332.7	180.7	29	0.727	63.1	190.1	83.0
5	0.155	133.6	331.9	171.1	Sept. 3	0.744	60.8	192.5	80.2
7	0.137	136.7	330.9	159.8	8	0.760	58.6	194.9	77.5
9	0.118	139.9	329.7	145.9	13	0.776	56.5	197.1	75.0
11	0.099	143.3	328.2	130.3	18	0.792	54.3	199.1	72.8
13	0.082	146.8	326.4	113.1	23	0.806	52.2	200.9	70.7
15	0.065	150.5	324.3	94.2	28	0.820	50.1	202.4	68.7
17	0.050	154.3	321.5	75.2	Oct. 3	0.834	48.1	203.7	67.0
19	0.036	158.2	317.8	56.5	8	0.847	46.0	204.8	65.3
21	0.025	161.9	313.5	40.3	13	0.860	44.0	205.6	63.7
23	0.015	165.8	304.9	25.0	18	0.872	42.0	206.1	62.2
25	0.009	169.4	291.9	14.5	23	0.883	40.0	206.4	60.9
27	0.005	172.2	268.3	7.9	28	0.894	38.1	206.4	59.6
29	0.004	172.8	233.6	6.8	Nov. 2	0.903	36.2	206.1	58.4
May 1	0.006	171.0	204.5	10.5	7	0.913	34.3	205.5	57.3
3	0.011	167.7	187.9	18.9	12	0.922	32.5	204.6	56.2
5	0.019	164.0	178.4	31.1	17	0.930	30.6	203.5	55.3
7	0.030	160.2	172.5	46.3	22	0.938	28.8	202.0	54.3
9	0.042	156.3	168.7	63.5	27	0.946	27.0	200.2	53.5
11	0.056	152.5	165.9	81.1	Dec. 2	0.953	25.2	198.1	52.6
13	0.072	148.8	163.9	99.1	7	0.959	23.5	195.7	51.9
15	0.089	145.2	162.4	115.7	12	0.965	21.7	193.1	51.2
17	0.107	141.8	161.2	130.6	17	0.970	20.0	190.1	50.6
19	0.125	138.6	160.3	143.8	22	0.975	18.3	186.9	50.0
21	0.144	135.4	159.6	155.0	27	0.979	16.6	183.3	49.4
26	0.190	128.3	158.5	174.5	32	0.983	14.9	179.7	49.0

MARS not being in opposition during the year 1897, the satellites will not be visible.

APPARENT DISK OF MARS, 1897.

January	1,	0.978
January	31,	0.926
March	2,	0.901
April	1,	0.900
May	1,	0.912
May	31,	0.929
June	30,	0.948
July	30,	0.965
August	29,	0.981
September	28,	0.992
October	28,	0.999
November	27,	1.000
December	27,	0.997

The numbers in this table are the versed sines of the illuminated disk, the apparent diameter of the planet being taken as unity.



**APPARENT ORBITS OF THE SATELLITES OF JUPITER IN 1897,
AS SEEN IN AN INVERTING TELESCOPE.**

(The vertical scale for the planet is three times and for the orbits five times the horizontal one.)

The object of this figure is to facilitate the identification of the satellites in cases where the diagrams of configurations do not suffice for that purpose: reference to the above diagram enables one to identify the inner and outer satellite of the pair. The central, vertical ellipse represents the disk of Jupiter, elongated three times in the vertical direction.

Facing each page of the phenomena of Jupiter's satellites, pages 462—482, is the page of diagrams of configurations, for the same month. The light disks ○ in the vertical row in the middle of the page represent the relative position of Jupiter each day. The dots adjacent in the same horizontal space represent the positions of the several satellites on the same day, at the hour and minute of Washington mean time indicated above the diagrams. The latitudes of the satellites are always considered zero in constructing the diagrams, except where two or more satellites chance to be at nearly the same distance from the planet, when they are placed one above the other according to their apparent latitudes. The numerals designating the satellites are placed on the right or left hand side of the dot, according as the motion of the satellite, for the time of the configuration, is toward the east or toward the west—the motion being always toward the numeral. Frequently, at the epoch of the configuration, one or more satellites will be invisible, being projected on the disk of the planet: this phenomenon is indicated by a light disk ○ at the left hand side of the page. Frequently, also, one or more satellites will be invisible, being concealed in occultation behind the disk, or eclipsed in the shadow of the planet: this phenomenon is indicated by a dark disk ● at the right hand side of the page. In both cases, the annexed numeral serves to point out which satellite is thus rendered invisible.

When an observation is made at a different hour from that for which the diagram is constructed, the motion of the satellite during the interval may be judged by transferring its given position to the above diagram, and estimating its motion during the elapsed interval on the above diagrams of the orbits, by means of the following table of the periods;—

MEAN SYNODIC PERIODS OF THE SATELLITES

	d	h	m	s	=	d		d	h	m	s	=	d
I.	1	18	28	35.945	=	1.76986048	III.	7	3	59	35.854	=	7.16638720
II.	3	13	17	53.735	=	3.55409416	IV.	16	18	5	6.928	=	16.75355241

WASHINGTON MEAN TIME OF SUPERIOR GEOCENTRIC CONJUNCTION.

SATELLITE II.

		h	m			h	m			h	m			h	m
Jan.	1	15	36.0	March	20	16	52.0	June	6	20	10.4	Oct.	20	0	36.1
	5	4	48.6		24	6	1.7		10	9	30.1		23	13	59.2
	8	18	0.0		27	19	11.0		13	22	50.0		27	3	22.2
	12	7	11.9		31	8	21.5		17	12	10.4		30	16	45.1
	15	20	22.2	April	3	21	32.0		21	1	30.9	Nov.	3	6	8.0
	19	9	32.8		7	10	43.3		24	14	51.8		6	19	30.5
	22	22	42.1		10	23	54.8		28	4	13.0		10	8	53.0
	26	11	51.9		14	13	7.2	July	1	17	34.4		13	22	15.2
Feb.	30	1	0.4		18	2	19.6		5	6	56.0		17	11	37.5
	2	14	9.3		21	15	33.1		8	20	17.9		21	0	59.0
	6	3	16.9		25	4	46.7		12	9	40.0		24	14	20.6
	9	16	25.4		28	18	1.3		15	23	2.2	Dec.	28	3	41.8
	13	5	32.8	May	2	7	16.0		19	12	24.6		1	17	3.0
	16	18	41.0		5	20	31.5		23	1	47.4		5	6	23.3
	20	7	47.9		9	9	47.3		26	15	10.0		8	19	43.7
	23	20	55.7		12	23	3.7		30	4	33.0		12	9	3.4
March	27	10	3.0		16	12	20.5	Aug.	2	17	55.9		15	22	23.2
	2	23	10.8		20	1	37.8		6	7	19.1		19	11	41.8
	6	12	18.2		23	14	55.5		9	20	42.3		23	1	0.7
	10	1	26.5		27	4	13.7		13	10	5.4		26	14	18.6
	13	14	34.5		30	17	32.2	Oct.	12	21	49.1		30	3	36.7
	17	3	43.4	June	3	6	51.1		16	11	12.6				

SATELLITE III.

		h	m			h	m			h	m			h	m
Jan.	7	3	51.2	March	26	16	36.5	June	13	10	32.5	Oct.	27	21	51.7
	14	7	21.5	April	2	20	4.0		20	14	44.0	Nov.	4	2	12.7
	21	10	47.6		9	23	35.6		27	18	58.1		11	6	31.8
	28	14	10.4		17	3	11.2	July	4	23	14.9		18	10	48.9
Feb.	4	17	30.4		24	6	51.1		12	3	34.1		25	15	3.9
	11	20	47.9	May	1	10	35.8		19	7	54.8	Dec.	2	19	16.5
	19	0	4.0		8	14	25.4		26	12	17.0		9	23	25.7
	26	3	19.4		15	18	19.5	Aug.	2	16	40.4		17	3	31.5
March	5	6	35.3		22	22	17.7		9	21	5.0		24	7	33.3
	12	9	52.9		30	2	19.3	Oct.	13	13	4.5		31	11	31.1
	19	13	12.9	June	6	6	24.4		20	17	28.8				

SATELLITE IV.

		h	m			h	m			h	m			h	m
Jan.	6	14	40.7	March	30	15	32.8	June	22	6	23.2	Nov.	4	0	39.1
	23	5	57.0	April	16	7	6.4	July	9	1	57.5		20	20	28.0
Feb.	8	20	27.4	May	2	23	38.0		25	21	57.9	Dec.	7	15	44.2
	25	10	35.2		19	17	4.6	Aug.	11	18	17.7		24	10	19.4
March	14	0	48.9	June	5	11	22.1	Oct.	18	4	27.3				

WASHINGTON MEAN TIME.

JANUARY.

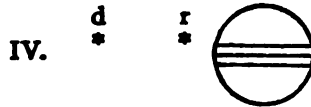
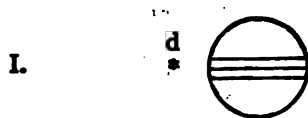
d	h	m	s	I.	Ec.	Dis.	d	h	m	s	I.	Sh.	Ec.	d	h	m	s	I.	Sh.	Ec.
1	11	33	42.2	I.*	Ec.	Dis.	11	7	28		I.	Sh.	Ec.	21	22	19		I.	Sh.	Ec.
12	1	55.9		II.*	Ec.	Dis.		8	22		I.	Tr.	Ec.		23	2		I.	Tr.	Ec.
14	54			I.*	Oc.	Re.	12	2	23	21.8	I.	Ec.	Dis.	22	17	13	4.0	I.*	Ec.	Dis.
17	1			II.*	Oc.	Re.		3	56	45.7	II.	Ec.	Dis.		19	50	36.7	II.	Ec.	Dis.
2	8	46		I.	Sh.	In.		5	34		I.	Oc.	Re.		20	12		I.	Oc.	Re.
	9	49		I.	Tr.	In.		8	37		II.	Oc.	Re.		21	0	37.4	IV.	Ec.	Dis.
	11	6		I.*	Sh.	Ec.		23	37		I.	Sh.	In.	22	0	7		II.	Oc.	Re.
	12	8		I.*	Tr.	Ec.	18	0	30		I.	Tr.	In.		1	29	9.4	IV.	Ec.	Re.
3	6	1	57.6	I.	Ec.	Dis.		1	57		I.	Sh.	Ec.		3	51		IV.	Oc.	Dis.
	6	34		II.	Sh.	In.		2	49		I.	Tr.	Ec.		8	4		IV.	Oc.	Re.
	8	6		III.	Sh.	In.		20	51	34.8	I.	Ec.	Dis.		14	27		I.*	Sh.	In.
	8	42		II.	Tr.	In.		22	24		II.	Sh.	In.		15	10		I.*	Tr.	In.
	9	20		I.	Oc.	Re.	14	0	1		I.	Oc.	Re.		16	47		I.*	Sh.	Ec.
	9	28		II.	Sh.	Ec.		0	12		II.	Tr.	In.		17	28		I.*	Tr.	Ec.
	11	33		II.*	Tr.	Ec.		1	18		II.	Sh.	Ec.	24	11	41	23.0	I.*	Ec.	Dis.
	11	44		III.*	Sh.	Ec.		2	7	26.1	III.	Ec.	Dis.		14	14		II.*	Sh.	In.
	12	19		III.*	Tr.	In.		3	3		II.	Tr.	Ec.		14	39		I.*	Oc.	Re.
	15	48		III.*	Tr.	Ec.		5	35	21.9	III.	Ec.	Re.		15	39		II.*	Tr.	In.
4	3	14		I.	Sh.	In.		5	37		III.	Oc.	Dis.		17	8		II.*	Sh.	Ec.
	4	16		I.	Tr.	In.		9	6		III.*	Oc.	Re.		18	30		II.*	Tr.	Ec.
	5	34		I.	Sh.	Ec.		10	33		IV.*	Sh.	In.		20	1		III.	Sh.	In.
	6	35		I.	Tr.	Ec.		15	15		IV.*	Sh.	Ec.		22	47		III.	Tr.	In.
5	0	30	14.0	I.	Ec.	Dis.		18	5		I.*	Sh.	In.		23	38		III.	Sh.	Ec.
	1	20	34.2	II.	Ec.	Dis.		18	50		IV.*	Tr.	In.	25	2	15		III.	Tr.	Ec.
	3	47		I.	Oc.	Re.		18	57		I.	Tr.	In.		8	56		I.*	Sh.	In.
	6	14		II.	Oc.	Re.		20	25		I.	Sh.	Ec.		9	36		I.*	Tr.	In.
	21	43		I.	Sh.	In.		21	16		I.	Tr.	Ec.		11	16		I.*	Sh.	Ec.
	22	43		I.	Tr.	In.		23	4		IV.	Tr.	Ec.		11	54		I.*	Tr.	Ec.
6	0	3		I.	Sh.	Ec.	15	15	19	51.7	I.*	Ec.	Dis.	26	6	9	44.3	I.	Ec.	Dis.
	1	2		I.	Tr.	Ec.		17	14	20.2	II.*	Ec.	Dis.		9	5		I.*	Oc.	Re.
	3	0	52.4	IV.	Ec.	Dis.		18	27		I.*	Oc.	Re.		9	9	17.0	II.*	Ec.	Dis.
	8	32	34.2	IV.	Ec.	Re.		21	47		II.	Oc.	Re.		13	17		II.*	Oc.	Re.
	12	34		IV.*	Oc.	Dis.	16	12	34		I.*	Sh.	In.	27	3	24		I.	Sh.	In.
	16	48		IV.*	Oc.	Re.		13	24		I.*	Tr.	In.		4	2		I.	Tr.	In.
	18	58	28.7	I.	Ec.	Dis.		14	54		I.*	Sh.	Ec.		5	44		I.	Sh.	Ec.
	19	51		II.	Sh.	In.		15	43		I.*	Tr.	Ec.		6	21		I.	Tr.	Ec.
	21	52		II.	Tr.	In.		11	42	9.0	I.*	Ec.	Dis.	28	0	38	3.3	I.	Ec.	Dis.
	22	10	3.8	III.	Ec.	Dis.		12	54		II.*	Sh.	In.		3	31		I.	Oc.	Re.
	22	14		I.	Oc.	Re.		12	54		I.*	Oc.	Re.		3	31		II.	Sh.	In.
	22	43		II.	Sh.	Ec.		13	22		II.*	Tr.	In.		4	46		II.	Tr.	In.
7	0	43		II.	Tr.	Ec.		14	35		II.*	Sh.	Ec.		6	24		II.	Sh.	Ec.
	1	38	25.6	III.	Ec.	Re.		16	3		III.*	Sh.	In.		7	37		II.	Tr.	Ec.
	2	7		III.	Oc.	Dis.		16	13		II.*	Tr.	Ec.		10	2	51.2	III.*	Ec.	Dis.
	5	36		III.	Oc.	Re.		19	22		III.	Tr.	In.		15	54		III.*	Oc.	Re.
	16	11		I.*	Sh.	In.		19	40		III.	Sh.	Ec.		21	53		I.	Sh.	In.
	17	10		I.*	Tr.	In.		22	50		III.	Tr.	Ec.		22	28		I.	Tr.	In.
	18	31		I.*	Sh.	Ec.	18	7	2		I.	Sh.	In.	29	0	13		I.	Sh.	Ec.
	19	29		I.	Tr.	Ec.		7	50		I.	Tr.	In.		0	47		I.	Tr.	Ec.
8	13	26	44.4	I.*	Ec.	Dis.		9	22		I.*	Sh.	Ec.		19	6	23.7	I.	Ec.	Dis.
	14	38	6.3	II.*	Ec.	Dis.		10	9		I.*	Tr.	Ec.		21	57		I.	Oc.	Re.
	16	41		I.*	Oc.	Re.	19	4	16	28.5	I.	Ec.	Dis.		22	26	55.5	II.	Ec.	Dis.
	19	25		II.	Oc.	Re.		6	33	0.3	II.	Ec.	Dis.	20	2	26		II.	Oc.	Re.
9	10	40		I.*	Sh.	In.		7	20		I.	Oc.	Re.		16	21		I.*	Sh.	In.
	11	36		I.*	Tr.	In.		10	58		II.*	Oc.	Re.		16	54		I.*	Tr.	In.
	13	0		I.*	Sh.	Ec.	20	1	30		I.	Sh.	In.		18	41		I.*	Sh.	Ec.
	13	54		I.*	Tr.	Ec.		2	17		I.	Tr.	In.		19	13		I.	Tr.	Ec.
10	7	55	1.0	I.	Ec.	Dis.		3	50		I.	Sh.	Ec.	21	4	31		IV.	Sh.	In.
	9	8		II.	Sh.	In.		4	36		I.	Tr.	Ec.		9	10		IV.*	Sh.	Ec.
	11	3		II.*	Tr.	In.		22	44	45.6	I.	Ec.	Dis.		9	42		IV.*	Tr.	In.
	11	8		I.*	Oc.	Re.	21	0	58		II.	Sh.	In.		13	34	44.4	I.*	Ec.	Dis.
	12	2		II.*	Sh.	Ec.		1	46		I.	Oc.	Re.		13	55		IV.*	Tr.	Ec.
	12	5		III.*	Sh.	In.		2	30		II.	Tr.	In.		16	23		I.*	Oc.	Re.
	13	53		II.*	Tr.	Ec.		3	52		II.	Sh.	Ec.		16	48		II.*	Sh.	In.
	15	42		III.*	Sh.	Ec.		5	21		II.	Tr.	Ec.		17	53		II.*	Tr.	In.
	15	52		III.*	Tr.	In.		6	5	2.2	III.	Ec.	Dis.		19	41		II.	Sh.	Ec.
	19	21		III.	Tr.	Ec.		12	32		III.*	Oc.	Re.		20	44		II.	Tr.	Ec.
11	5	8		I.	Sh.	In.		19	59		I.	Sh.	In.		23	59		III.	Sh.	In.
	6	3		I.	Tr.	In.		20	43		I.	Tr.	In.							

NOTE.—In., denotes ingress; Ec., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.

Oc., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

JANUARY.

Phases of the Eclipses of the Satellites for an Inverting Telescope.*Configurations at 13^h 30^m for an Inverting Telescope.*

Day.	West.	East.
1	4'	'2 O '3 '1 ●
2	'4	1' O 2' 3'
3	○ 3' '4	2' '1
4	'4 3' '2 '1	O
5	'3 '4	O 3' 1'
6	'3 '1	O 2' '4 ●
7	2'	O 1' '3 '4
8	'2 '1 O	'3 '4
9	○ 1'	O '2 3' '4
10	○ 2'	O 3' '1 '4
11	3' '2 1'	O 4'
12	'3	O '2 '1 4'
13	'3 '1	O 2' 4'
14	2'	O 1' 1'
15	4' '2 '1	O '3
16	○ 1' 4'	O '2 3'
17	○ 2' 4'	O '1 3'
18	4' '2 1'	O
19	'4 3'	O '2 '1
20	'4 '3 1'	O 2'
21	'4 2'	O '3 1'
22	'4 '2 '1	O '3
23		O 1' '4 '2 3'
24		O 2' 3' '4 '1 ●
25	2' 3' 1'	O '4
26	3'	O '2 '1 '4
27	'3 1'	O 2' 4'
28	2'	O 1' 4' '3 ●
29	'2 '1	O '3 4'
30		O 1' '2 4' 3'
31	○ 4'	'1 O 2' 3'

WASHINGTON MEAN TIME.

FEBRUARY.

1	2	8		III.	Tr.	In.	10	9	32		I.*	Sh.	Eg.	19	3	41		I.	Tr.	In.
	3	36		III.	Sh.	Eg.		9	50		I.*	Tr.	Eg.		5	55		I.	Sh.	Eg.
	5	36		III.	Tr.	Eg.	11	4	25	2.0	I.	Ec.	Dis.		6	0		I.	Tr.	Eg.
	10	50		I.*	Sh.	In.		6	59		I.*	Oc.	Re.	20	0	47	11.1	I.	Ec.	Dis.
	11	21		I.*	Tr.	In.		8	39		II.*	Sh.	In.		3	8		I.	Oc.	Re.
	13	10	0	I.*	Sh.	Eg.		9	14		II.*	Tr.	In.		5	16	5.0	II.	Ec.	Dis.
	13	40		I.*	Tr.	Eg.		11	32		II.*	Sh.	Eg.		9	13		II.*	Oc.	Re.
2	8	3	7.8	I.*	Ec.	Dis.		12	5		II.*	Tr.	Eg.		22	4		I.	Sh.	In.
	10	49		I.*	Oc.	Re.		17	59	39.7	III.*	Ec.	Dis.		22	7		I.	Tr.	In.
	11	45	36.0	II.*	Ec.	Dis.		22	32		III.	Oc.	Re.	21	0	23		I.	Sh.	Eg.
	15	34		II.*	Oc.	Re.	12	1	41		I.	Sh.	In.		0	26		I.	Tr.	Eg.
3	5	18		I.	Sh.	In.		1	57		I.	Tr.	In.		19	15	37.5	I.	Ec.	Dis.
	5	47		I.	Tr.	In.		4	1		I.	Sh.	Eg.		21	34		I.	Oc.	Re.
	7	38		I.*	Sh.	Eg.		4	16		I.	Tr.	Eg.	22	0	30		II.	Sh.	In.
	8	6		I.*	Tr.	Eg.		22	53	27.2	I.	Ec.	Dis.		0	33		II.	Tr.	In.
	2	31	28.4	I.	Ec.	Dis.	13	1	25		I.	Oc.	Re.		3	23		II.	Sh.	Eg.
	5	15		I.	Oc.	Re.		3	39	40.1	II.	Ec.	Dis.		3	24		II.	Tr.	Eg.
	6	5		II.	Sh.	In.		6	58		II.*	Oc.	Re.		11	54		III.*	Sh.	In.
	7	0		II.	Tr.	In.		20	10		I.	Sh.	In.		11	58		III.*	Tr.	In.
	8	58		II.*	Sh.	Eg.		20	23		I.	Tr.	In.		15	29		III.*	Sh.	Eg.
	9	51		II.*	Tr.	Eg.		22	29		I.	Sh.	Eg.		15	29		III.*	Tr.	Eg.
	14	1	25.2	III.*	Ec.	Dis.		22	42		I.	Tr.	Eg.		16	32		I.*	Sh.	In.
	19	15		III.	Oc.	Re.	14	17	21	51.2	I.*	Ec.	Dis.		16	33		I.*	Tr.	In.
	23	47		I.	Sh.	In.		19	51		I.	Oc.	Re.		18	51		I.	Sh.	Eg.
5	0	13		I.	Tr.	In.		21	56		II.	Sh.	In.		18	52		I.	Tr.	Eg.
	2	7		I.	Sh.	Eg.		22	21		II.	Tr.	In.	23	13	41		I.*	Oc.	Dis.
	2	32		I.	Tr.	Eg.	15	0	49		II.	Sh.	Eg.		16	0		I.*	Oc.	Re.
	20	59	51.0	I.	Ec.	Dis.		1	11		II.	Tr.	Eg.		19	30		II.	Oc.	Dis.
	23	40		I.	Oc.	Re.		7	56		III.*	Sh.	In.		22	23	3.3	II.	Ec.	Re.
6	1	3	16.7	II.	Ec.	Dis.		8	43		III.*	Tr.	In.	24	10	59		I.*	Tr.	In.
	4	42		II.	Oc.	Re.		11	31		III.*	Sh.	Eg.		11	1		I.*	Sh.	In.
	18	15		I.*	Sh.	In.		12	12		III.*	Tr.	Eg.		13	18		I.*	Tr.	Eg.
	18	39		I.	Tr.	In.		14	38		I.*	Sh.	In.		13	20		I.*	Sh.	Eg.
	20	35		I.	Sh.	Eg.		14	49		I.*	Tr.	In.	25	8	7		I.*	Oc.	Dis.
	20	58		I.	Tr.	Eg.		16	58		I.*	Sh.	Eg.		8	27		IV.*	Oc.	Dis.
	15	28	13.5	I.*	Ec.	Dis.		17	8		I.*	Tr.	Eg.		10	27	2.5	I.*	Ec.	Re.
	18	7		I.*	Oc.	Re.	16	11	50	19.1	I.*	Ec.	Dis.		13	22	2.1	IV.*	Ec.	Re.
	19	22		II.	Sh.	In.		14	17		I.*	Oc.	Re.		13	40		II.*	Tr.	In.
	20	7		II.	Tr.	In.		16	58	19.7	II.*	Ec.	Dis.		13	47		II.*	Sh.	In.
	22	15		II.	Sh.	Eg.		20	6		II.	Oc.	Re.		16	31		II.*	Tr.	Eg.
	22	58		II.	Tr.	Eg.		22	29		IV.	Sh.	In.		16	40		II.*	Sh.	Eg.
8	3	57		III.	Sh.	In.		23	59		IV.	Tr.	In.	26	1	35		III.	Oc.	Dis.
	5	26		III.	Tr.	In.	17	3	5		IV.	Sh.	Eg.		5	21	31.2	III.	Ec.	Re.
	7	33		III.*	Sh.	Eg.		4	14		IV.	Tr.	Eg.		5	25		I.	Tr.	In.
	8	55		III.*	Tr.	Eg.		9	7		I.*	Sh.	In.		5	30		I.	Sh.	In.
	12	44		I.*	Sh.	In.		9	15		I.*	Tr.	In.		7	44		I.*	Tr.	Eg.
	13	5		I.*	Tr.	In.		11	27		I.*	Sh.	Eg.		7	49		I.*	Sh.	Eg.
	15	0	24.6	IV.*	Ec.	Dis.		11	34		I.*	Tr.	Eg.	27	2	32		I.	Oc.	Dis.
	15	4		I.*	Sh.	Eg.	18	6	18	44.0	I.	Ec.	Dis.		4	55	31.6	I.	Ec.	Re.
	15	24		I.*	Tr.	Eg.		8	42		I.*	Oc.	Re.		8	38		II.*	Oc.	Dis.
	22	34		IV.	Oc.	Re.		11	13		II.*	Sh.	In.		11	40	39.7	II.*	Ec.	Re.
9	9	56	39.2	I.*	Ec.	Dis.		11	27		II.*	Tr.	In.		23	51		I.	Tr.	In.
	12	33		I.*	Oc.	Re.		14	6		II.*	Sh.	Eg.		23	58		I.	Sh.	In.
	14	21	57.0	II.*	Ec.	Dis.		14	18		II.*	Tr.	Eg.	28	2	10		I.	Tr.	Eg.
	17	51		II.*	Oc.	Re.		21	58	16.5	III.	Ec.	Dis.		2	17		I.	Sh.	Eg.
10	7	12		I.*	Sh.	In.	19	1	49		III.	Oc.	Re.		20	58		I.	Oc.	Dis.
	7	31		I.*	Tr.	In.		3	35		I.	Sh.	In.		23	24	0.0	I.	Ec.	Re.

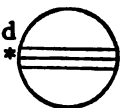



NOTE.—In., denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.

Oc., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

FEBRUARY.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.		III.	
II.		IV.	

Configurations at 12^h 30^m for an Inverting Telescope.

Day.	West.	East.
1	○ 1°	○
2	4° 3°	2° 1°
3	4° 3° 1°	○ 2°
4	4° 3° 1°	○ 1°
5	4° 2° 1°	○ 3°
6	4° 1°	○ 1° 2° 3°
7	4° 1°	○ 2° 3°
8	2° 1°	○ 1°
9	3° 2°	○ 4° 1° ●
10	3° 1°	○ 2° 4°
11	3° 2°	○ 1° 4°
12	2° 1°	○ 3° 4°
13	1°	○ 1° 3° 4°
14	1°	○ 2° 3° 4°
15	2° 3°	○ 1° 4°
16	3° 2°	○ 4° 1° ●
17	3° 4° 1°	○ 2°
18	○ 2° 4° 3°	○ 1°
19	4° 2° 1°	○ 3°
20	4°	○ 2° 1° 3°
21	4° 1°	○ 2° 3°
22	○ 3° 4° 2°	○ 1°
23	4° 3° 2° 1°	○
24	○ 1° 3° 4°	○ 2°
25	3°	○ 2° 1° 4° ●
26	2° 1°	○ 3° 4°
27		○ 2° 1° 3° 4°
28	1°	○ 2° 3° 4°

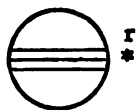
WASHINGTON MEAN TIME.											
MARCH.											
d	h	m	s					d	h	m	s
1	2	46		II.	Tr.	In.		11	18	7	
	3	4		II.	Sh.	In.			18	57	
	5	37		II.	Tr.	Eg.			20	59	
	5	57		II.	Sh.	Eg.			21	48	
	15	15		III.*	Tr.	In.		12	8	7	
	15	53		III.*	Sh.	In.			8	53	
	18	17		I.	Tr.	In.			9	18	
	18	27		I.	Sh.	In.			11	12	
	18	45		III.	Tr.	Eg.			11	37	
	19	28		III.	Sh.	Eg.			13	17	16.3
	20	36		I.	Tr.	Eg.		18	6	0	
	20	46		I.	Sh.	Eg.			8	43	44.4
2	15	24		I.*	Oc.	Dis.			13	9	
	17	52	32.6	I.*	Ec.	Re.			16	52	45.8
	21	45		II.	Oc.	Dis.			22	38	
3	0	59	5.6	II.	Ec.	Re.		14	3	0	
	12	43		I.*	Tr.	In.			3	2	32.0
	12	55		I.*	Sh.	In.			3	19	
	15	2		I.*	Tr.	Eg.			3	47	
	15	14		I.*	Sh.	Eg.			5	38	
4	9	50		I.*	Oc.	Dis.			6	6	
	12	21	1.7	I.*	Ec.	Re.			7	19	38.6
	15	53		II.*	Tr.	In.		15	0	27	16.8
	16	22		II.*	Sh.	In.			3	12	
	18	45		II.	Tr.	Eg.			7	15	
	19	15		II.	Sh.	Eg.			8	14	
5	4	50		III.	Oc.	Dis.			10	7	
	7	9		I.*	Tr.	In.			11	6	
	7	24		I.*	Sh.	In.			21	46	
	9	19	15.0	III.*	Ec.	Re.			21	51	
	9	28		I.*	Tr.	Eg.			22	16	
	9	43		I.*	Sh.	Eg.			23	52	
	14	6		IV.*	Tr.	In.		16	0	5	
	16	29		IV.*	Sh.	In.			0	35	
	18	25		IV.	Tr.	Eg.			1	22	
	21	1		IV.	Sh.	Eg.			3	25	
6	4	16		I.	Oc.	Dis.			18	53	
	6	49	33.4	I.*	Ec.	Re.			21	40	54.3
	10	53		II.*	Oc.	Dis.		17	2	18	
	14	16	43.6	II.*	Ec.	Re.			6	11	6.0
7	1	35		I.	Tr.	In.			16	12	
	1	52		I.	Sh.	In.			16	44	
	3	54		I.	Tr.	Eg.			18	31	
	4	12		I.	Sh.	Eg.			19	3	
	22	42		I.	Oc.	Dis.		18	13	19	
8	1	18	3.9	I.	Ec.	Re.			16	9	28.0
	5	0		II.	Tr.	In.			20	23	
	5	39		II.	Sh.	In.			21	32	
	7	52		II.*	Tr.	Eg.			23	15	
	8	31		II.*	Sh.	Eg.		19	0	24	
	18	32		III.	Tr.	In.			10	38	
	19	52		III.	Sh.	In.			11	13	
	20	1		I.	Tr.	In.			11	27	
	20	21		I.	Sh.	In.			12	57	
	22	2		III.	Tr.	Eg.			13	31	
	22	20		I.	Tr.	Eg.			17	15	31.7
	22	40		I.	Sh.	Eg.		20	7	46	4.4
	23	26		III.	Sh.	Eg.			10	38	
9	17	8		I.*	Oc.	Dis.			15	26	45.8
	19	46	39.0	I.	Ec.	Re.			19	28	
10	0	1		II.	Oc.	Dis.		21	5	5	
	3	35	6.7	II.	Ec.	Re.			5	42	
	14	27		I.*	Tr.	In.			7	24	
	14	50		I.*	Sh.	In.			8	1	
	16	46		I.*	Tr.	Eg.		22	2	12	
	17	9		I.*	Sh.	Eg.			4	31	
11	11	34		I.*	Oc.	Dis.			5	6	38.6
	14	15	10.3	I.*	Ec.	Re.			8	56	

WASHINGTON MEAN TIME.

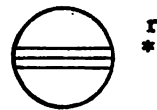
MARCH.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

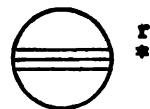
I.



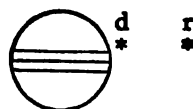
III.



II.



IV.

*Configurations at 11^h 30^m for an Inverting Telescope.*

Day.	West.			East.		
1		2'	○	3' 1'		4'
2		3' 2' 1'	○			4'
3	3'		○	1' 2'		4'
4		3'	○	2'		4' 1' ●
5		2' 1'	○	4' 3'		
6		4'	○	1' 3'		2' ●
7	4'	4' 1'	○	2' 3'		
8	4'	2'	○	3' 1'		
9	4'	3' 1'	○			
10	4'	3'	○	1' 2'		
11	4'	3'	○	2'		1' ●
12	4'	2' 1'	○			3' ●
13		4' 2'	○	1' 3'		
14		1'	○	4' 2' 3'		
15		2'	○	3' 4'		
16		2' 3' 1'	○			4'
17	3'		○	1' 2'		4'
18		3' 1'	○	2'		4'
19	○ 1'	2'	○			4' 3' ●
20		2'	○	1' 3' 4'		
21		1'	○	4' 2' 3'		
22	○ 2'		○	1' 3'		
23		4' 2' 13'	○			
24	4'	3'	○	2' 1'		
25	4'	3'	○	2'		
26	4'	2' 3'	○	1'		
27	4'	2'	○	3'		1' ●
28	4'	1'	○	2' 3'		
29		4'	○	2' 1' 3'		
30		2' 1' 3' 4'	○			
31	3'		○	2' 1' 4'		

WASHINGTON MEAN TIME.

APRIL.

d	h	m	s				d	h	m	s				d	h	m	s			
1	16	51		I.	Oc.	Dis.	11	10	26		I.*	Tr.	In.	21	3	50		I.	Oc.	Dis.
	19	58	27.9	I.	Ec.	Re.		11	26		I.*	Sh.	In.		7	14	8.3	I.*	Ec.	Re.
2	1	0		II.	Tr.	In.		12	45		I.*	Tr.	Eg.		14	7		II.*	Oc.	Dis.
	2	43		II.	Sh.	In.		13	45		I.*	Sh.	Eg.		19	10	4.2	II.	Ec.	Re.
	3	53		II.	Tr.	Eg.	12	7	33		I.*	Oc.	Dis.	22	1	10		I.	Tr.	In.
	5	34		II.	Sh.	Eg.		10	50	30.7	I.*	Ec.	Re.		2	18		I.	Sh.	In.
	14	11		I.*	Tr.	In.		16	34		II.	Tr.	In.		3	29		I.	Tr.	Eg.
	15	2		I.*	Sh.	In.		18	37		II.	Sh.	In.		4	37		I.	Sh.	Eg.
	16	30		I.	Tr.	Eg.		19	27		II.	Tr.	Eg.		22	18		I.	Oc.	Dis.
	17	21		I.	Sh.	Eg.		21	28		II.	Sh.	Eg.	23	1	42	50.0	I.	Ec.	Re.
	18	17		III.	Oc.	Dis.	13	4	54		I.	Tr.	In.		8	14		II.*	Tr.	In.
	21	50		III.	Oc.	Re.		5	55		I.	Sh.	In.		10	31		II.*	Sh.	In.
	21	50	56.1	III.	Ec.	Dis.		7	13		I.*	Tr.	Eg.		11	7		II.*	Tr.	Eg.
3	1	13	8.7	III.	Ec.	Re.		8	14		I.*	Sh.	Eg.		13	22		II.*	Sh.	Eg.
	11	18		I.*	Oc.	Dis.		11	38		III.*	Tr.	In.		19	38		I.	Tr.	In.
	14	27	8.8	I.*	Ec.	Re.		15	12		III.	Tr.	Eg.		20	47		I.	Sh.	In.
	20	6		II.	Oc.	Dis.		15	47		III.	Sh.	In.		21	57		I.	Tr.	Eg.
4	0	40	36.0	II.	Ec.	Re.		19	18		III.	Sh.	Eg.		23	6		I.	Sh.	Eg.
	8	38		I.*	Tr.	In.	14	2	1		I.	Oc.	Dis.	24	5	4		III.	Oc.	Dis.
	9	31		I.*	Sh.	In.		5	19	16.2	I.	Ec.	Re.		8	38		III.*	Oc.	Re.
	10	57		I.*	Tr.	Eg.		11	41		II.*	Oc.	Dis.		9	48	40.0	III.*	Ec.	Dis.
	11	50		I.*	Sh.	Eg.		16	34	27.1	II.	Ec.	Re.		11	35		IV.*	Tr.	In.
5	5	45		I.	Oc.	Dis.		23	21		I.	Tr.	In.		13	9	0.0	III.*	Ec.	Re.
	8	55	46.3	I.*	Ec.	Re.	15	0	23		I.	Sh.	In.		16	8		IV.	Tr.	Eg.
	14	11		II.*	Tr.	In.		1	40		I.	Tr.	Eg.		16	46		I.	Oc.	Dis.
	16	1		II.	Sh.	In.		2	42		I.	Sh.	Eg.		20	11	35.7	I.	Ec.	Re.
	17	4		II.	Tr.	Eg.		20	28		I.	Oc.	Dis.		22	31		IV.	Sh.	In.
	18	52		II.	Sh.	Eg.		23	47	56.8	I.	Ec.	Re.	25	2	50		IV.	Sh.	Eg.
6	3	5		I.	Tr.	In.	16	4	51		IV.	Oc.	Dis.		3	20		II.	Oc.	Dis.
	4	0		I.	Sh.	In.		5	47		II.	Tr.	In.		8	27	41.5	II.*	Ec.	Re.
	5	24		I.	Tr.	Eg.		7	55		II.*	Sh.	In.		14	6		I.*	Tr.	In.
	6	19		I.	Sh.	Eg.		8	40		II.*	Tr.	Eg.		15	16		I.	Sh.	In.
	8	5		III.*	Tr.	In.		9	22		IV.*	Oc.	Re.		16	25		I.	Tr.	Eg.
	11	39		III.*	Tr.	Eg.		10	46		II.*	Sh.	Eg.		17	34		I.	Sh.	Eg.
	11	48		III.*	Sh.	In.		15	6	50.3	IV.	Ec.	Dis.	26	11	14		I.	Oc.	Dis.
	15	19		III.*	Sh.	Eg.		17	48		I.	Tr.	In.		14	40	17.0	I.	Ec.	Re.
7	0	12		I.	Oc.	Dis.		18	52		I.	Sh.	In.		21	28		II.	Tr.	In.
	3	24	29.8	I.	Ec.	Re.		19	14	48.1	IV.	Ec.	Re.		23	49		II.	Sh.	In.
	9	17		II.*	Oc.	Dis.		20	7		I.	Tr.	Eg.	27	0	21		II.	Tr.	Eg.
	13	58	44.0	II.*	Ec.	Re.		21	11		I.	Sh.	Eg.		2	40		II.	Sh.	Eg.
	19	35		IV.	Tr.	In.	17	1	24		III.	Oc.	Dis.		8	34		I.*	Tr.	In.
	21	32		I.	Tr.	In.		4	59		III.	Oc.	Re.		9	44		I.*	Sh.	In.
	22	28		I.	Sh.	In.		5	49	34.5	III.	Ec.	Dis.		10	53		I.*	Tr.	Eg.
	23	51		I.	Tr.	Eg.		9	10	32.7	III.*	Ec.	Re.		12	3		I.*	Sh.	Eg.
8	0	5		IV.	Tr.	Eg.		14	55		I.	Oc.	Dis.		18	59		III.	Tr.	In.
	0	47		I.	Sh.	Eg.		18	16	41.0	I.	Ec.	Re.		22	34		III.	Tr.	Eg.
	4	30		IV.	Sh.	In.	18	0	53		II.	Oc.	Dis.		23	46		III.	Sh.	In.
	8	53		IV.*	Sh.	Eg.		5	52	6.0	II.	Ec.	Re.	28	3	16		III.	Sh.	Eg.
	18	39		I.	Oc.	Dis.		12	16		I.*	Tr.	In.		5	42		I.	Oc.	Dis.
	21	53	8.9	I.	Ec.	Re.		13	21		I.*	Sh.	In.		9	9	5.4	I.*	Ec.	Re.
	3	22		II.	Tr.	In.		14	34		I.*	Tr.	Eg.		16	35		II.	Oc.	Dis.
	5	19		II.	Sh.	In.		15	40		I.	Sh.	Eg.		21	45	34.7	II.	Ec.	Re.
	6	15		II.	Tr.	Eg.	19	9	23		I.*	Oc.	Dis.	29	3	2		I.	Tr.	In.
	8	10		II.*	Sh.	Eg.		12	45	21.3	I.*	Ec.	Re.		4	13		I.	Sh.	In.
	15	59		I.	Tr.	In.		19	0		II.	Tr.	In.		5	21		I.	Tr.	Eg.
	16	57		I.	Sh.	In.		21	13		II.	Sh.	In.		6	31		I.	Sh.	Eg.
	18	18		I.	Tr.	Eg.		21	53		II.	Tr.	Eg.	30	0	10		I.	Oc.	Dis.
	19	16		I.	Sh.	Eg.	20	0	4		II.	Sh.	Eg.		3	37	48.2	I.	Ec.	Re.
	21	49		III.	Oc.	Dis.		6	43		I.	Tr.	In.		10	43		II.*	Tr.	In.
10	1	23		III.	Oc.	Re.		7	49		I.*	Sh.	In.		13	8		II.*	Sh.	In.
	1	50	27.9	III.	Ec.	Dis.		9	2		I.*	Tr.	Eg.		13	36		II.*	Tr.	Eg.
	5	12	3.7	III.	Ec.	Re.		10	8		I.*	Sh.	Eg.		15	58		II.	Sh.	Eg.
	13	6		I.*	Oc.	Dis.		15	16		III.	Tr.	In.		21	30		I.	Tr.	In.
	16	21	51.5	I.	Ec.	Re.		18	51		III.	Tr.	Eg.		22	42		I.	Sh.	In.
	22	29		II.	Oc.	Dis.		19	47		III.	Sh.	In.		23	49		I.	Tr.	Eg.
11	3	16	23.6	II.	Ec.	Re.		23	17		III.	Sh.	Eg.							

NOTE.—In, denotes ingress; Eg, egress; Dis, disappearance; Re, reappearance; Ec, eclipse.

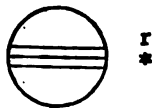
Oc, denotes occultation; Tr, transit of the satellite; Sh, transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

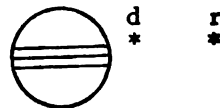
APRIL.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.



III.



II.



IV.

*Configurations at 11^h 00^m for an Inverting Telescope.*

Day.	West.				East.			
1		'3	'1	○	2'	'4		
2			2''3	○	1'		'4	
3			'2	'1○	'3		'4	
4				1'○	'2	'3		4'
5				○	1'	3'		4'
6	○3'		2'	1'○		4'		
7		3'		○	4' 1'			2●
8		'3		1'○		2'		
9		4'	'3	2'○	1'			
10	4'		'2	'1○	'3			
11	○1' 4'			○	'2	'3		
12	'4			○	'1	2'	3'	
13	'4		2'	1'○	3'			
14		'4	3'	2'○	'1			
15		'3	'4	1'○		2'		
16			'3	2'○	'4	1'		
17			'2	'1○	'3	'4		
18				○	1'	'2	'3	'4
19				○	2'	3'		'4 1'●
20			2'	1'○	3'			'4
21			3'	'2○	'1			4'
22		3'		1'○		'2	4'	
23	○2'		'3	○	1'	4'		
24			'2	'1○	4' 3'			
25			4'	○	1' 2'	'3		
26		1'		'1○	2'	3'		
27	4'		2'	1'○	3'			
28	4'		3'	'2○	'1			
29	'4		3'	1'○		'2		
30	'4		'3	○	2'	'1		

WASHINGTON MEAN TIME.

MAY.

[illegible]

NOTE.—In., denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.

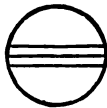
Oc., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

MAY.

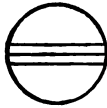
Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.



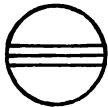
r *

III.



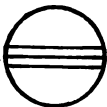
d * r *

II.



r *

IV.



d * r *

Configurations at 10^h 00^m for an Inverting Telescope.

Day.	West.				East.			
1		'4	'2	'1	○			'3 ●
2				'4	○	'2	'1	'3
3				'1	○	'4	'2	'3
4			'2		○	'1	'3	'4
5			'23		○	'1		'4
6		'3		'1	○		'2	'4
7		'3			○	'2	'1	'4
8			'2	'1	'3	○		'4
9					○	'1	'3	'4
10				'1	○	'4	'3	
11	○	'4		'2	○	'1	'3	
12		'4	'2	'3	○			'1 ●
13		'4	'3		'1	○	'2	
14	'4		'3		○	'1	'3	
15	'4		'2	'1	'3	○		
16	'4			'2	○	'1	'3	
17		'4		'1	○	'2	'3	
18			'4	'2	○	'1	'3	
19	○	'3		'2	'1	○		
20	○	'1		'3		○	'2	'4
21			'3		○	'1	'2	'4
22				'2	'3	'1	○	'4
23				'2	○	'1	'3	'4
24				'1	○	'2	'3	'4
25	○	'2			○	'1	'3	'4
26			'2	'1	○	'3		'4
27			'3		○	'1	'2	'4
28		'3		'4	○	'2		'1 ●
29			'4	'32	'1	○		
30		'4		'2	○	'1		
31	'4			'1	○	'2	'3	

WASHINGTON MEAN TIME.

JUNE.

d	h	m	s	I.	Ec.	Re.	d	h	m	s	I.	Tr.	Eg.	d	h	m	s	II.	Ec.	Re.
1	0	15	45.5	I.	Ec.	Re.	10	16	48		I.	Tr.	Eg.	21	5	7	41.0	II.	Ec.	Re.
10	22			II.*	Tr.	In.	11	11	39		I.	Sh.	Eg.	5	25			I.	Tr.	In.
12	54			II.	Sh.	In.	11	11	39		I.	Oc.	Dis.	6	34			I.	Sh.	In.
13	15			II.	Tr.	Eg.	15	8	32.0		I.	Ec.	Re.	7	44			I.	Tr.	Eg.
15	43			II.	Sh.	Eg.	12	2	24		II.	Tr.	In.	8	53			I.*	Sh.	Eg.
18	3			I.	Tr.	In.	4	50			II.	Sh.	In.	22	2	36		I.	Oc.	Dis.
19	19			I.	Sh.	In.	5	17			II.	Tr.	Eg.	4	6			IV.	Oc.	Dis.
20	22			I.	Tr.	Eg.	7	38			II.	Sh.	Eg.	6	1	14.2		I.	Ec.	Re.
21	38			I.	Sh.	Eg.	8	58			I.*	Tr.	In.	8	40			IV.*	Oc.	Re.
2	14	35		III.	Tr.	In.	10	11			I.*	Sh.	In.	15	19	48.4		IV.	Ec.	Dis.
15	13			I.	Oc.	Dis.	11	17			I.	Tr.	Eg.	18	29			II.	Tr.	In.
18	10			III.	Tr.	Eg.	12	30			I.	Sh.	Eg.	19	5	17.6		IV.	Ec.	Re.
18	44	36.7		I.	Ec.	Re.	13	6	9		I.	Oc.	Dis.	20	46			II.	Sh.	In.
19	42			III.	Sh.	In.	8	45			III.*	Oc.	Dis.	21	22			II.	Tr.	Eg.
23	9			III.	Sh.	Eg.	9	37	22.2		I.*	Ec.	Re.	23	34			II.	Sh.	Eg.
3	5	25		II.	Oc.	Dis.	12	20			III.	Oc.	Re.	23	55			I.	Tr.	In.
10	41	9.8		II.*	Ec.	Re.	13	46	2.1		III.	Ec.	Dis.	23	1	3		I.	Sh.	In.
12	32			I.	Tr.	In.	17	1			IV.	Tr.	In.	2	14			I.	Tr.	Eg.
13	47			I.	Sh.	In.	17	1	29.5		III.	Ec.	Re.	3	22			I.	Sh.	Eg.
14	51			I.	Tr.	Eg.	21	24			II.	Oc.	Dis.	21	6			I.	Oc.	Dis.
16	6			I.	Sh.	Eg.	21	35			IV.	Tr.	Eg.	24	0	30	4.8	I.	Ec.	Re.
4	9	42		I.*	Oc.	Dis.	14	2	33	10.6	II.	Ec.	Re.	3	5			III.	Tr.	In.
13	13	22.1		I.	Ec.	Re.	3	27			I.	Tr.	In.	6	39			III.	Tr.	Eg.
23	42			II.	Tr.	In.	4	36			IV.	Sh.	In.	7	41			III.	Sh.	In.
5	2	12		II.	Sh.	In.	4	39			I.	Sh.	In.	11	5			III.	Sh.	Eg.
2	35			II.	Tr.	Eg.	5	46			I.	Tr.	Eg.	13	26			II.	Oc.	Dis.
5	1			II.	Sh.	Eg.	6	58			I.	Sh.	Eg.	18	24			I.	Tr.	In.
7	1			I.	Tr.	In.	8	39			IV.*	Sh.	Eg.	18	24	52.5		II.	Ec.	Re.
8	16			I.*	Sh.	In.	15	0	38		I.	Oc.	Dis.	19	31			I.	Sh.	In.
9	4			IV.*	Oc.	Dis.	4	6	5.5		I.	Ec.	Re.	20	43			I.	Tr.	Eg.
9	20			I.*	Tr.	Eg.	15	46			II.	Tr.	In.	21	50			I.	Sh.	Eg.
10	35			I.*	Sh.	Eg.	18	8			II.	Sh.	In.	25	15	36		I.	Oc.	Dis.
13	40			IV.	Oc.	Re.	18	39			II.	Tr.	Eg.	18	58	49.3		I.	Ec.	Re.
21	16	19.4		IV.	Ec.	Dis.	20	57			II.	Sh.	Eg.	26	7	52		II.*	Tr.	In.
6	1	7	57.2	IV.	Ec.	Re.	21	57			I.	Tr.	In.	10	4			II.*	Sh.	In.
4	11			I.	Oc.	Dis.	23	8			I.	Sh.	In.	10	44			II.	Tr.	Eg.
4	37			III.	Oc.	Dis.	16	0	16		I.	Tr.	Eg.	12	52			II.	Sh.	Eg.
7	42	12.1		I.	Ec.	Re.	1	27			I.	Sh.	Eg.	12	54			I.	Tr.	In.
8	12			III.*	Oc.	Re.	19	8			I.	Oc.	Dis.	14	0			I.	Sh.	In.
9	46	43.2		III.*	Ec.	Dis.	22	34	56.5		I.	Ec.	Re.	15	13			I.	Tr.	Eg.
13	2	55.2		III.	Ec.	Re.	22	52			III.	Tr.	In.	16	19			I.	Sh.	Eg.
18	44			II.	Oc.	Dis.	17	2	27		III.	Tr.	Eg.	27	10	5		I.*	Oc.	Dis.
23	58	31.8		II.	Ec.	Re.	3	42			III.	Sh.	In.	13	27	39.0		I.	Ec.	Re.
7	1	30		I.	Tr.	In.	7	7			III.	Sh.	Eg.	17	11			III.	Oc.	Dis.
2	45			I.	Sh.	In.	10	44			II.*	Oc.	Dis.	20	45			III.	Oc.	Re.
3	49			I.	Tr.	Eg.	15	50	26.2		II.	Ec.	Re.	21	45	8.1		III.	Ec.	Dis.
5	4			I.	Sh.	Eg.	16	26			I.	Tr.	In.	28	0	59	4.3	III.	Ec.	Re.
22	40			I.	Oc.	Dis.	17	37			I.	Sh.	In.	2	47			II.	Oc.	Dis.
8	2	10	55.6	I.	Ec.	Re.	18	45			I.	Tr.	Eg.	7	23			I.	Tr.	In.
13	3			II.	Tr.	In.	19	56			I.	Sh.	Eg.	7	42	3.7		II.	Ec.	Re.
15	31			II.	Sh.	In.	18	13	37		I.	Oc.	Dis.	8	29			I.*	Sh.	In.
15	56			II.	Tr.	Eg.	17	3	41.2		I.	Ec.	Re.	9	42			I.*	Tr.	Eg.
18	20			II.	Sh.	Eg.	19	5	7		II.	Tr.	In.	10	47			I.	Sh.	Eg.
20	0			I.	Tr.	In.	7	27			II.	Sh.	In.	29	4	35		I.	Oc.	Dis.
21	14			I.	Sh.	In.	8	0			II.*	Tr.	Eg.	7	56	21.3		I.	Ec.	Re.
22	18			I.	Tr.	Eg.	10	15			II.*	Sh.	Eg.	21	14			II.	Tr.	In.
23	32			I.	Sh.	Eg.	10	56			I.	Tr.	In.	23	23			II.	Sh.	In.
9	17	10		I.	Oc.	Dis.	12	6			I.	Sh.	In.	30	0	7		II.	Tr.	Eg.
18	42			III.	Tr.	In.	13	15			I.	Tr.	Eg.	1	53			I.	Tr.	In.
20	39	46.8		I.	Ec.	Re.	14	24			I.	Sh.	Eg.	2	11			II.	Sh.	Eg.
22	17			III.	Tr.	Eg.	20	8	7		I.	Oc.	Dis.	2	57			I.	Sh.	In.
23	42			III.	Sh.	In.	11	32	31.1		I.	Ec.	Re.	4	12			I.	Tr.	Eg.
10	3	8		III.	Sh.	Eg.	12	57			III.	Oc.	Dis.	5	15			I.	Sh.	Eg.
8	4			II.*	Oc.	Dis.	16	31			III.	Oc.	Re.	12	20			IV.	Tr.	In.
13	15	52.2		II.	Ec.	Re.	17	45	33.4		III.	Ec.	Dis.	16	51			IV.	Tr.	Eg.
14	29			I.	Tr.	In.	21	0	15.6		III.	Ec.	Re.	22	38			IV.	Sh.	In.
15	42			I.	Sh.	In.	21	0	5		II.	Oc.	Dis.	23	5			I.	Oc.	Dis.

NOTE.—In., denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.

Oc., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

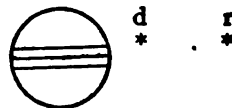
JUNE.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.



III.



II.



IV.

*Configurations at 9^h 00^m for an Inverting Telescope.*

Day.	West.				East.			
1	'4				○ 2' 1' 3'			
2	'4		2'	'1	○ 3'			
3		'4	3'		○ 2' 1'			
4		3'	'4	'1	○ 2'			
5	○ 1'		'3	2'	○			'4 ●
6			2'		○ 3' 1'	'4		
7			1'		○	'2	'3	'4
8					○ 2' 1'	3'		'4
9		2'	'1		○ 3'			'4
10			3'		○ 1'			4' 2' ●
11		3'		'1	○ 2'		4'	
12	○ 1'	'3	2'		○ 4'			'3 ●
13		2'			○ 1' 4'			
14			4' 1'		○ 2' 3'			
15		4'			○ 1' 3'			
16	4'		2' 1'		○ 3'			
17	4'		3' 2'		○ 1'			
18	'4	3'		'1	○ 2'			
19	'4	'3		2'	○ 1'			
20		'4	2'	'3	○			'1 ●
21			4'	1'	○ 2' 3'			
22					○ 4' 1' 2'	3'		
23		2' 1'			○ 3' 4'			
24			23'		○ 1'		4'	
25		3'		'1	○ 2'		'4	
26	○ 2'	'3			○ 1'			'4
27			2' 3'	'1	○			4'
28	○ 1'				○ 2' 3'		4'	
29					○ 1' 2' 4' 3'			
30			2' 1'		○ 4' 3'			

WASHINGTON MEAN TIME.

JULY.

d	h	m	s				d	h	m	s				d	h	m	s			
1	2	25	11.4	I.	Ec.	Re.	10	19	11					21	8	41		I.*	Sh.	In.
2	36			IV.	Sh.	Eg.		20	7						10	2		II.	Sh.	Eg.
7	20			III.	Tr.	In.	11	14	5						10	10		I.	Tr.	Eg.
10	53			III.	Tr.	Eg.		17	17	47.5					10	59		I.	Sh.	Eg.
11	40			III.	Sh.	In.	12	1	48					22	5	5		I.	Oc.	Dis.
15	3			III.	Sh.	Eg.		5	21						8	10	14.8	I.*	Ec.	Re.
16	8			II.	Oc.	Dis.		5	44	55.6					20	18		III.	Tr.	In.
20	23			I.	Tr.	In.		8	14						23	37		III.	Sh.	In.
20	59	11.2		II.	Ec.	Re.		8	57	16.4					23	49		III.	Tr.	Eg.
21	26			I.	Sh.	In.		11	21					23	0	22		II.	Oc.	Dis.
22	42			I.	Tr.	Eg.		12	18						2	21		I.	Tr.	In.
23	44			I.	Sh.	Eg.		12	50	26.2					2	58		III.	Sh.	Eg.
27	35			I.	Oc.	Dis.		13	40						3	9		I.	Sh.	In.
20	53	55.4		I.	Ec.	Re.		14	36						4	40		I.	Tr.	Eg.
3	10	38		II.	Tr.	In.	13	8	35						4	41	25.2	II.	Ec.	Re.
12	42			II.	Sh.	In.		11	46	28.5					5	27		I.	Sh.	Eg.
13	29			II.	Tr.	Eg.	14	2	48						23	35		I.	Oc.	Dis.
14	52			I.	Tr.	In.		4	38					24	2	38	56.4	I.	Ec.	Re.
15	29			II.	Sh.	Eg.		5	40						19	0		II.	Tr.	In.
15	55			I.	Sh.	In.		5	51						20	33		II.	Sh.	In.
17	12			I.	Tr.	Eg.		6	46						20	51		I.	Tr.	In.
18	13			I.	Sh.	Eg.		7	25						21	38		I.	Sh.	In.
4	12	5		I.	Oc.	Dis.		8	10						21	51		II.	Tr.	Eg.
15	25	44.6		I.	Ec.	Re.		9	4						21	10		I.	Tr.	Eg.
21	29			III.	Oc.	Dis.	15	3	5						23	20		II.	Sh.	Eg.
5	1	2		III.	Ec.	Re.		6	15	17.0					23	56		I.	Sh.	Eg.
1	45	18.8		III.	Ec.	Dis.		15	56					25	18	6		I.	Oc.	Dis.
4	58	27.8		III.	Ec.	Re.		19	29						19	46		IV.	Oc.	Dis.
5	30			II.	Oc.	Dis.		19	37						21	7	43.3	I.	Ec.	Re.
9	22			I.*	Tr.	In.		21	37					26	0	10		IV.	Oc.	Re.
10	16	18.6		II.	Ec.	Re.		22	59						3	25	24.9	IV.	Ec.	Dis.
10	23			I.	Sh.	In.	16	0	21						6	57	27.3	IV.	Ec.	Re.
11	41			I.	Tr.	Eg.		1	15						10	32		III.	Oc.	Dis.
12	41			I.	Sh.	Eg.		2	7	26.8					13	45		II.	Oc.	Dis.
6	6	35		I.	Oc.	Dis.		2	40						15	21		I.	Tr.	In.
9	51	26.3		I.	Ec.	Re.		3	33						16	7		I.	Sh.	In.
7	0	1		II.	Tr.	In.		21	35						16	54	30.3	III.	Ec.	Re.
2	0			II.	Sh.	In.	17	0	43	59.5					17	40		I.	Tr.	Eg.
2	53			II.	Tr.	Eg.		8	7						17	58	22.3	II.	Ec.	Re.
3	52			I.	Tr.	In.		12	35						18	25		I.	Sh.	Eg.
4	47			II.	Sh.	Eg.		16	12					27	12	36		I.	Oc.	Dis.
4	52			I.	Sh.	In.		16	39						15	36	22.1	I.	Ec.	Re.
6	11			I.	Tr.	Eg.		17	56						8	25		II.*	Tr.	In.
7	10			I.	Sh.	Eg.		18	51						9	51		I.	Tr.	In.
8	1	5		I.	Oc.	Dis.		19	3						9	52		II.	Sh.	In.
4	20	15.7		I.	Ec.	Re.		19	44						10	35		I.	Sh.	In.
11	37			III.	Tr.	In.		20	31						11	16		II.	Tr.	Eg.
15	10			III.	Tr.	Eg.		20	43						12	10		I.	Tr.	Eg.
15	39			III.	Sh.	In.		21	10						12	39		II.	Sh.	Eg.
18	52			II.	Oc.	Dis.		22	2						12	53		I.	Sh.	Eg.
19	1			III.	Sh.	Eg.	18	16	5					29	7	6		I.	Oc.	Dis.
22	22			I.	Tr.	In.		19	12	47.3					10	5	8.7	I.	Ec.	Re.
23	21			I.	Sh.	In.	19	6	9						0	41		III.	Tr.	In.
23	33	22.3		II.	Ec.	Re.		9	41						3	8		II.	Oc.	Dis.
23	43			IV.	Oc.	Dis.		9	44	38.3					3	36		III.	Sh.	In.
9	0	41		I.	Tr.	Eg.		10	59						4	11		III.	Tr.	Eg.
1	39			I.	Sh.	Eg.		12	56	10.3					4	21		I.	Tr.	In.
4	12			IV.	Oc.	Re.		13	21						5	4		I.	Sh.	In.
9	22	40.0		IV.	Ec.	Dis.		14	12						6	40		I.	Tr.	Eg.
13	1	37.8		IV.	Ec.	Re.		15	24	27.3					6	56		III.	Sh.	Eg.
19	35			I.	Oc.	Dis.		15	40						7	15	18.1	II.	Ec.	Re.
22	48	59.2		I.	Ec.	Re.		16	30						7	22		I.	Sh.	Eg.
13	24			II.	Tr.	In.	20	10	35					31	1	36		I.	Oc.	Dis.
15	19			II.	Sh.	In.		13	41	27.2					4	33	49.1	I.	Ec.	Re.
16	16			II.	Tr.	Eg.	21	5	36						21	49		II.	Tr.	In.
16	52			I.	Tr.	In.		7	15						22	51		I.	Tr.	In.
17	49			I.	Sh.	In.		7	51						23	11		II.	Sh.	In.
18	6			II.	Sh.	Eg.		8	28						23	32		I.	Sh.	In.

NOTE.—In, denotes ingress; Eg, egress; Dis, disappearance; Re, reappearance; Ec, eclipses.

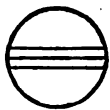
Oc, denotes occultation; Tr, transit of the satellite; Sh, transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

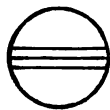
JULY.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

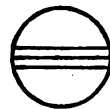
I.



III.



II.



IV.

*Configurations at 8^h 30^m for an Inverting Telescope.*

Day.	West.				East.			
1	○ 3'		4' 2'	○	'1			
2		4'	3'	'1	○	'2		
3		4'	'3		○	2' 1'		
4	4'		2' 3'	'1	○			
5	'4				○	1' 3'		
6		'4			○	2' 3'		'1 ●
7		'4	2' 1'	○		3'		
8			4' 2'	○	3' 1'			
9			3' 1'	○	'4	'2		
10		3'		○	2' 1'	'4		
11			3' 1'	○		'4		
12				○	1' 3'	'4	2' ●	
13				○	2' 3'	4'		
14			2' 1'	○	3'	4'		
15		'2		○	1' 3'	4'		
16		3' 1'		○	'2	4'		
17		3'		○	4' 2'			
18		'3	4' 2'	○				
19		4'		○	1'			3' ●
20	4'		'1	○	'2	3'		
21	○ 2' ○ 1' 4'			○	3'			
22	'4		'2	○	'1	3'		
23	'4		3' 1'	○	'2			
24		4' 2'		○	'12'			
25		'3	2' 1' 4'	○				
26			'2	3' ○	1' 3'			
27			'1	○	'2 3'	4'		
28	○ 2'			○	1'	3'	'4	
29		'2		○	3'		'4	'1 ●
30			3' 1'	○	'2		4'	
31		3'		○	'1	2'	4'	

WASHINGTON MEAN TIME.

AUGUST.

d	h	m	s																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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THE SATELLITES OF JUPITER

ARE NOT VISIBLE FROM AUGUST 15 UNTIL OCTOBER 12.

JUPITER BEING TOO NEAR TO THE SUN.

NOTE.—In, denotes ingress; Eg, egress; Dis, disappearance; Re, reappearance; Ec, eclipse.

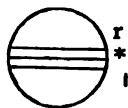
Occ., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

AUGUST.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

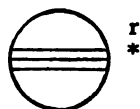
I.



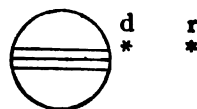
III.



II.



IV.

*Configurations at 7^h 30^m for an Inverting Telescope.*

Day.	West.			East.		
1		'3	1' 2	○		4'
2			'2 '3	○	1'	'4
3	○ 4'		'1	○	3' 2	
4		4'		○	2'1'	'3
5	4'	2'	'1	○		3'
6	○ 3' ○ 1' 4'			○		'2 ●
7	4'	3'		○	'1	2'
8	'4	'3	1' 2	○		
9	'4	2' 3		○	'1	
10		'4	'1	○	'3'2	
11			'4	○	1' 2	'3
12		2'	'1	○	'4	3'
13			2' ○ 1' 2			'4
14		3'		○	2'	'4

WASHINGTON MEAN TIME.

OCTOBER.

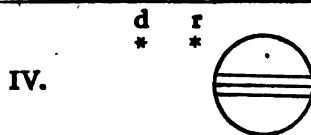
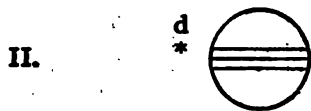
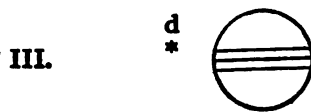
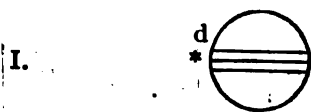
d	h	m	s		d	h	m	s		d	h	m	s	
12	13	0		I	Sh.	In.		18	6	33		II	Sh.	Eg.
13	29			I	Tr.	In.		7	42			II	Tr.	Eg.
15	17			I	Sh.	Eg.		17	46	55.0		I*	Ec.	Dis.
15	47			I	Tr.	Eg.		20	37			I	Oc.	Re.
19	31	53.1		II	Ec.	Dis.		19	14	53		I	Sh.	In.
23	11			II	Oc.	Re.		15	29			I	Tr.	In.
18	9	32	6.5	III	Ec.	Dis.		17	10			I*	Sh.	Eg.
10	21	28.2		I	Ec.	Dis.		17	46			I*	Tr.	Eg.
13	7			I	Oc.	Re.		22	5	51.1		II	Ec.	Dis.
14	40			III	Oc.	Re.		20	1	57		II	Oc.	Re.
14	7	28		I	Sh.	In.		12	15	18.5		I	Ec.	Dis.
7	59			I	Tr.	In.		13	30	27.7		III	Ec.	Dis.
9	45			I	Sh.	Eg.		15	7			I	Oc.	Re.
10	17			I	Tr.	Eg.		19	4			III	Oc.	Re.
14	33			II	Sh.	In.		21	9	21		I	Sh.	In.
15	35			II	Tr.	In.		9	59			I	Tr.	In.
17	16			II*	Sh.	Eg.		11	38			I	Sh.	Eg.
18	18			II	Tr.	Eg.		12	16			I	Tr.	Eg.
15	4	49	58.5	I	Ec.	Dis.		17	9			II*	Sh.	In.
7	37			I	Oc.	Re.		18	24			II	Tr.	In.
16	1	56		I	Sh.	In.		19	51			II	Sh.	Eg.
2	29			I	Tr.	In.		21	6			II	Tr.	Eg.
4	13			I	Sh.	Eg.		22	6	43	47.0	I	Ec.	Dis.
4	46			I	Tr.	Eg.		9	37			I	Oc.	Re.
8	48	48.6		II	Ec.	Dis.		23	3	50		I	Sh.	In.
12	34			II	Oc.	Re.		4	29			I	Tr.	In.
23	18	24.4		I	Ec.	Dis.		6	7			I	Sh.	Eg.
23	19			III	Sh.	In.		6	46			I	Tr.	Eg.
17	1	33		III	Tr.	In.		11	22	47.1		II	Ec.	Dis.
2	7			I	Oc.	Re.		15	20			II	Oc.	Re.
2	29			III	Sh.	Eg.		24	1	12	10.8	I	Ec.	Dis.
4	44			III	Tr.	Eg.		3	16			III	Sh.	In.
20	25			I	Sh.	In.		4	7			I	Oc.	Re.
20	59			I	Tr.	In.		5	58			III	Tr.	In.
21	35	17.5		IV	Ec.	Dis.		6	26			III	Sh.	Eg.
22	42			I	Sh.	Eg.		9	6			III	Tr.	Eg.
23	16			I	Tr.	Eg.		22	18			I	Sh.	In.
18	0	25	12.9	IV	Ec.	Re.		22	59			I	Tr.	In.
2	51			IV	Oc.	Dis.		25	0	35		I	Sh.	Eg.
3	51			II	Sh.	In.		1	16			I	Tr.	Eg.
5	0			II	Tr.	In.		6	26			II	Sh.	In.
6	4			IV	Oc.	Re.								
25	7	48						25	7	48		II	Tr.	In.
9	8							9	8			II	Sh.	Eg.
10	30							10	30			II	Tr.	Eg.
19	40	40.0						19	40	40.0		I	Ec.	Dis.
22	37							22	37			I	Oc.	Re.
26	4	43						26	4	43		IV	Sh.	In.
7	48							7	48			IV	Sh.	Eg.
11	21							11	21			IV	Tr.	In.
14	20							14	20			IV	Tr.	Eg.
16	47							16	47			I*	Sh.	In.
17	28							17	28			I*	Tr.	In.
19	3							19	3			I	Sh.	Eg.
19	45							19	45			I	Tr.	Eg.
27	0	39	52.7					27	0	39	52.7	II	Ec.	Dis.
4	43							4	43			II	Oc.	Re.
14	9	2.0						14	9	2.0		I	Ec.	Dis.
17	7							17	7			I*	Oc.	Re.
17	28	49.5						17	28	49.5		III*	Ec.	Dis.
23	25							23	25			III	Oc.	Re.
23	11	15						23	11	15		I	Sh.	In.
11	58							11	58			I	Tr.	In.
13	32							13	32			I	Sh.	Eg.
14	15							14	15			I	Tr.	Eg.
19	44							19	44			II	Sh.	In.
21	12							21	12			II	Tr.	In.
22	26							22	26			II	Sh.	Eg.
23	53							23	53			II	Tr.	Eg.
29	8	37	28.7					29	8	37	28.7	I	Ec.	Dis.
11	37							11	37			I	Oc.	Re.
30	5	43						30	5	43		I	Sh.	In.
6	28							6	28			I	Tr.	In.
8	0							8	0			I	Sh.	Eg.
8	45							8	45			I	Tr.	Eg.
13	56	49.0						13	56	49.0		II	Ec.	Dis.
18	6							18	6			II*	Oc.	Re.
31	3	5	51.0					31	3	5	51.0	I	Ec.	Dis.
6	6							6	6			I	Oc.	Re.
7	15							7	15			III	Sh.	In.
10	22							10	22			III	Tr.	In.
10	24							10	24			III	Sh.	Eg.
13	27							13	27			III	Tr.	Eg.

NOTE.—In., denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.

Oc., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

OCTOBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.*Configurations at 17^h 0^m for an Inverting Telescope.*

Day.	West.				East.		
12	4'		'3	'21'	○		
13	4'				○	'3	'1
14	○2.	'4		'1'	○		'3
15		'4		'2	○	'1	3'
16			'4	'1	○	'23'	
17			3'	'4	○	'1'	2'
18		3'	2'	'1	○	'4	
19	○1'		'3	'2	○		'4
20					○	'1	'2
21				'1'	○2'		'3
22			'2		○	'1	3'
23				'1	○	'2	3'
24				3'	○	'1'	2'
25		3'		2'	○	'1	4'
26	○4'		'3	'2	○1'		
27			4'		○	'2	
28		4'		'1'	○	2'	'3
29	4'		2'		○	'1	3'
30	4'			'1'	○		3'
31	'4			3'	○	'1'	2'

WASHINGTON MEAN TIME.

NOVEMBER.

d	h	m	s				d	h	m	s				d	h	m	s				
1	0	12		I.	Sh.	In.	11	5	1		III.	Oc.	Dis.	20	21	32		IV.	Oc.	Re.	
	0	58		I.	Tr.	In.		8	2		III.	Oc.	Re.		21	39	25.6	II.	Ec.	Dis.	
	2	29		I.	Sh.	Eg.		15	2		I.	Sh.	In.		21	2	18	II.	Oc.	Re.	
	3	15		I.	Tr.	Eg.		15	56		I.*	Tr.	In.		8	46	15.4	I.	Ec.	Dis.	
	9	2		II.	Sh.	In.		17	19		I.*	Sh.	Eg.		12	1		I.	Oc.	Re.	
	10	35		II.	Tr.	In.		18	13		I.*	Tr.	Eg.		19	8		III.	Sh.	In.	
	11	44		II.	Sh.	Eg.		22	43		IV.	Sh.	In.		22	14		III.	Sh.	Eg.	
	13	15		II.	Tr.	Eg.		12	0	53	II.	Sh.	In.		23	20		III.	Tr.	In.	
	21	34	18.7	I.	Ec.	Dis.		1	38		IV.	Sh.	Eg.		23	2	17	III.	Tr.	Eg.	
	2	0	36	I.	Oc.	Re.		2	44		II.	Tr.	In.		5	52		I.	Sh.	In.	
	18	40		I.	Sh.	In.		3	34		II.	Sh.	Eg.		6	53		I.	Tr.	In.	
	19	28		I.	Tr.	In.		5	23		II.	Tr.	Eg.		8	9		I.	Sh.	Eg.	
	20	57		I.	Sh.	Eg.		7	36		IV.	Tr.	In.		9	9		I.	Tr.	Eg.	
	21	45		I.	Tr.	Eg.		10	4		IV.	Tr.	Eg.		16	45		II.*	Sh.	In.	
	3	13	58.6	II.	Ec.	Dis.		12	24	33.8	I.	Ec.	Dis.		18	51		II.	Tr.	In.	
	7	28		II.	Oc.	Re.		15	34		I.*	Oc.	Re.		19	26		II.	Sh.	Eg.	
	15	36	27.5	IV.*	Ec.	Dis.		18	9	30	I.	Sh.	In.		21	29		II.	Tr.	Eg.	
	16	2	39.3	I.*	Ec.	Dis.		10	26		I.	Tr.	In.		23	3	14	32.2	I.	Ec.	
	18	16	6.3	IV.	Ec.	Re.		11	47		I.	Sh.	Eg.		6	31		I.	Oc.	Re.	
	19	6		I.	Oc.	Re.		12	42		I.	Tr.	Eg.		24	0	20	I.	Sh.	In.	
	21	26	38.0	III.	Ec.	Dis.		19	5	7.7	II.	Ec.	Dis.		1	23		I.	Tr.	In.	
	23	17		IV.	Oc.	Dis.		23	35		II.	Oc.	Re.		2	37		I.	Sh.	Eg.	
	4	0	24	26.4	III.	Ec.	Re.		14	6	52	I.	Ec.	Dis.		3	39		I.	Tr.	Eg.
	0	41		III.	Oc.	Dis.		10	4		I.	Oc.	Re.		10	56	49.5	II.	Ec.	Dis.	
	2	1		IV.	Oc.	Re.		15	11		III.*	Sh.	In.		15	39		II.*	Oc.	Re.	
	3	45		III.	Oc.	Re.		18	17		III.*	Sh.	Eg.		21	42	55.0	I.	Ec.	Dis.	
	13	8		I.	Sh.	In.		19	3		III.	Tr.	In.		25	1	0	I.	Oc.	Re.	
	13	58		I.	Tr.	In.		22	3		III.	Tr.	Eg.		9	20	2.0	III.	Ec.	Dis.	
	15	25		I.	Sh.	Eg.		15	3	58	I.	Sh.	In.		12	14	46.5	III.	Ec.	Re.	
	16	15		I.*	Tr.	Eg.		4	56		I.	Tr.	In.		13	36		III.	Oc.	Dis.	
	22	19		II.	Sh.	In.		6	15		I.	Sh.	Eg.		16	31		III.*	Oc.	Re.	
	23	59		II.	Tr.	In.		7	12		I.	Tr.	Eg.		18	48		I.	Sh.	In.	
	5	1	1	II.	Sh.	Eg.		14	11		II.	Sh.	In.		19	52		I.	Tr.	In.	
	2	39		II.	Tr.	Eg.		16	7		II.*	Tr.	In.		21	5		I.	Sh.	Eg.	
	10	31	4.0	I.	Ec.	Dis.		16	51		II.*	Sh.	Eg.		22	8		I.	Tr.	Eg.	
	13	36		I.	Oc.	Re.		18	45		II.	Tr.	Eg.		26	6	2	II.	Sh.	In.	
	7	37		I.	Sh.	In.		1	21	17.7	I.	Ec.	Dis.		8	12		II.	Tr.	In.	
	8	27		I.	Tr.	In.		4	33		I.	Oc.	Re.		8	43		II.	Sh.	Eg.	
	9	54		I.	Sh.	Eg.		22	27		I.	Sh.	In.		10	49		II.	Tr.	Eg.	
	10	44		I.	Tr.	Eg.		23	25		I.	Tr.	In.		16	11	15.1	I.*	Ec.	Dis.	
	16	30	55.8	II.*	Ec.	Dis.		17	0	44	I.	Sh.	Eg.		19	29		I.	Oc.	Re.	
	20	50		II.	Oc.	Re.		1	42		I.	Tr.	Eg.		27	13	17	I.	Sh.	In.	
	4	59	25.2	I.	Ec.	Dis.		8	22	26.4	II.	Ec.	Dis.		14	22		I.*	Tr.	In.	
	8	5		I.	Oc.	Re.		12	57		II.	Oc.	Re.		15	34		I.*	Sh.	Eg.	
	11	13		III.	Sh.	In.		19	49	35.6	I.	Ec.	Dis.		16	38		I.*	Tr.	Eg.	
	14	21		III.	Sh.	Eg.		23	2		I.	Oc.	Re.		28	0	13	49.6	II.	Ec.	
	14	43		III.	Tr.	In.		18	5	22	III.	Ec.	Dis.		5	0		II.	Oc.	Re.	
	17	46		III.*	Tr.	Eg.		8	17	58.0	III.	Ec.	Re.		10	39	32.0	I.	Ec.	Dis.	
	8	2	5	I.	Sh.	In.		9	20		III.	Oc.	Dis.		13	59		I.	Oc.	Re.	
	2	57		I.	Tr.	In.		12	18		III.	Oc.	Re.		16	43		IV.*	Sh.	In.	
	4	22		I.	Sh.	Eg.		16	55		I.*	Sh.	In.		19	29		IV.	Sh.	Eg.	
	5	14		I.	Tr.	Eg.		17	55		I.*	Tr.	In.		23	5		III.	Sh.	In.	
	11	36		II.	Sh.	In.		19	12		I.	Sh.	Eg.		29	2	10	III.	Sh.	Eg.	
	13	21		II.	Tr.	In.		20	11		I.	Tr.	Eg.		3	31		IV.	Tr.	In.	
	14	17		II.	Sh.	Eg.		19	3	28	II.	Sh.	In.		3	35		III.	Tr.	In.	
	16	1		II.*	Tr.	Eg.		5	29		II.	Tr.	In.		5	13		IV.	Tr.	Eg.	
	23	27	51.3	I.	Ec.	Dis.		6	9		II.	Sh.	Eg.		6	28		III.	Tr.	Eg.	
	2	35		I.	Oc.	Re.		8	7		II.	Tr.	Eg.		7	45		I.	Sh.	In.	
	20	33		I.	Sh.	In.		14	17	57.3	I.	Ec.	Dis.		8	51		I.	Tr.	In.	
	21	27		I.	Tr.	In.		17	32		I.*	Oc.	Re.		10	2		I.	Sh.	Eg.	
	22	50		I.	Sh.	Eg.		20	9	37	IV.	Ec.	Dis.		11	7		I.	Tr.	Eg.	
	23	44		I.	Tr.	Eg.		11	23	50.4	I.	Sh.	In.		19	19		II.	Sh.	In.	
	10	5	48	9.8	II.	Ec.	Dis.		12	6	26.8	IV.	Ec.	Re.		21	34		II.	Tr.	In.
	10	13		II.	Oc.	Re.		12	24		I.	Tr.	In.		21	59		II.	Sh.	Eg.	
	17	56	10.6	I.*	Ec.	Dis.		13	40		I.	Sh.	Eg.		20	0	10	II.	Tr.	Eg.	
	21	5		I.	Oc.	Re.		14	41		I.	Tr.	Eg.		5	7	53.6	I.	Ec.	Dis.	
	11	1	24	18.3	III.	Ec.	Dis.		19	25	IV.	Oc.	Dis.		8	28		I.	Oc.	Re.	
	4	21	6.0	III.	Ec.	Re.															


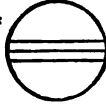

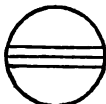
NOTE.—In., denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.

Oc., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

NOVEMBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.	d *		III.	d * r *	
II.	d *		IV.	d * r *	

Configurations at 16^h 30^m for an Inverting Telescope.

Day.	West.	East.
1	'4 3' '12' ○	
2	'3'4 '2 ○	I'
3	'3'4 '1' ○	'2
4		I' '2'4'3
5	2' ○	'1 '3
6	I' '2 ○	3' '4
7	○3' ○	'1 '2 '4
8	3' '1 2' ○	4'
9	'3 '2 ○	I' 4'
10	'3 '1 ○	'2 4'
11	○I' ○	'3'4'
12	2' 4' ○	I' '3
13	4' 4' '1' ○	3'
14	4' ○	3' '1 '2
15	○2'4' 3' I' ○	
16	'4 '3 '2 ○	I'
17	'4 '3 '1 ○	'2
18	'4 ○	I'3' 2'
19	'4 2' ○	'3 .I●
20	'2 I'4' ○	3'
21		'1'4'3' '3
22	3' I' ○	2' '4
23	3' 2' ○	I' 4'
24	'3 '1 ○	'2 4'
25		I' 2' 4'3'●
26	2' '1 ○	'3 4'
27	○I' '2 ○	'3'4'
28		I'4'3'2
29	3'1'4' ○	2'
30	'4 2' ○	I'

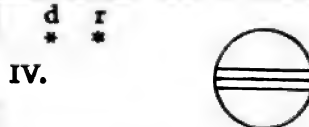
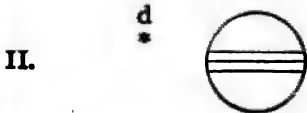
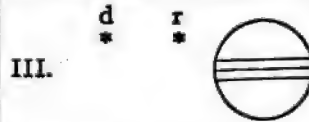
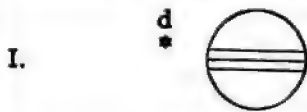
WASHINGTON MEAN TIME.													
DECEMBER.													
d	h	m	s	I.	Sh.	In.	d	h	m	s	I.	Ec.	Dis.
1	2	13		I.	Sh.	In.	10	19	57	36.6	I.	Ec.	Dis.
	3	20		I.	Tr.	In.		23	22		I.	Oc.	Re.
	4	30		I.	Sh.	Eg.	11	17	3		I.*	Sh.	In.
	5	36		I.	Tr.	Eg.		18	14		I.*	Tr.	In.
	13	31	19.0	II.	Ec.	Dis.		19	20		I.	Sh.	Eg.
	18	21		II.*	Oc.	Re.		20	30		I.	Tr.	Eg.
	23	36	9.2	I.	Ec.	Dis.	12	5	22	58.6	II.	Ec.	Dis.
2	2	57		I.	Oc.	Re.		10	21		II.	Oc.	Re.
	13	18	24.7	III.	Ec.	Dis.		14	25	51.3	I.*	Ec.	Dis.
	16	12	7.3	III.*	Ec.	Re.		17	51		I.*	Oc.	Re.
	17	51		III.*	Oc.	Dis.	13	7	1		III.	Sh.	In.
	20	42		I.	Sh.	In.		10	4		III.	Sh.	Eg.
	20	43		III.	Oc.	Re.		11	32		I.	Sh.	In.
	21	50		I.	Tr.	In.		11	56		III.	Tr.	In.
	22	59		I.	Sh.	Eg.		12	43		I.	Tr.	In.
3	0	5		I.	Tr.	Eg.		13	49		I.*	Sh.	Eg.
	8	36		II.	Sh.	In.		14	43		III.*	Tr.	Eg.
	10	54		II.	Tr.	In.		14	59*		I.*	Tr.	Eg.
	11	16		II.	Sh.	Eg.	14	0	27		II.	Sh.	In.
	13	30		II.	Tr.	Eg.		2	54		II.	Tr.	In.
	18	4	28.3	I.*	Ec.	Dis.		3	7		II.	Sh.	Eg.
	21	26		I.	Oc.	Re.		5	28		II.	Tr.	Eg.
4	15	10		I.*	Sh.	In.		8	54	10.5	I.	Ec.	Dis.
	16	19		I.*	Tr.	In.		12	19		I.	Oc.	Re.
	17	27		I.*	Sh.	Eg.	15	6	0		I.	Sh.	In.
	18	35		I.*	Tr.	Eg.		7	12		I.	Tr.	In.
5	2	48	20.4	II.	Ec.	Dis.		8	17		I.	Sh.	Eg.
	7	41		II.	Oc.	Re.		9	27		I.	Tr.	Eg.
	12	32	44.0	I.	Ec.	Dis.		10	42		IV.	Sh.	In.
	15	55		I.*	Oc.	Re.		13	16		IV.	Sh.	Eg.
6	3	3		III.	Sh.	In.		18	40	39.5	II.*	Ec.	Dis.
	6	7		III.	Sh.	Eg.		23	40		II.	Oc.	Re.
	7	47		III.	Tr.	In.	16	3	22	24.4	I.	Ec.	Dis.
	9	38		I.	Sh.	In.		6	48		I.	Oc.	Re.
	10	37		III.	Tr.	Eg.		21	13	56.0	III.	Ec.	Dis.
	10	48		I.	Tr.	In.	17	0	5	32.4	III.	Ec.	Re.
	11	55		I.	Sh.	Eg.		0	28		I.	Sh.	In.
	13	4		I.	Tr.	Eg.		1	41		I.	Tr.	In.
7	21	53		II.	Sh.	In.		2	9		III.	Oc.	Dis.
	0	15		II.	Tr.	In.		2	45		I.	Sh.	Eg.
	0	33		II.	Sh.	Eg.		3	56		I.	Tr.	Eg.
	2	50		II.	Tr.	Eg.		4	54		III.	Oc.	Re.
	3	38	56.6	IV.	Ec.	Dis.		13	44		II.*	Sh.	In.
	5	55	26.8	IV.	Ec.	Re.		16	13		II.*	Tr.	In.
	7	1	4.3	I.	Ec.	Dis.		16	24		II.*	Sh.	Eg.
	10	24		I.	Oc.	Re.		18	47		II.*	Tr.	Eg.
	15	7		IV.*	Oc.	Dis.		21	50	41.0	I.	Ec.	Dis.
	16	21		IV.*	Oc.	Re.	18	1	17		I.	Oc.	Re.
8	4	7		I.	Sh.	In.		18	56		I.	Sh.	In.
	5	17		I.	Tr.	In.		20	9		I.	Tr.	In.
	6	24		I.	Sh.	Eg.		21	13		I.	Sh.	Eg.
	7	32		I.	Tr.	Eg.		22	24		I.	Tr.	Eg.
	16	5	55.6	II.*	Ec.	Dis.	19	7	57	44.4	II.	Ec.	Dis.
	21	1		II.	Oc.	Re.		12	59		II.	Oc.	Re.
9	1	29	19.0	I.	Ec.	Dis.		16	18	55.0	I.*	Ec.	Dis.
	4	53		I.	Oc.	Re.		19	45		I.	Oc.	Re.
	17	16	9.4	III.*	Ec.	Dis.	20	10	59		III.	Sh.	In.
	20	8	49.2	III.	Ec.	Re.		13	25		I.*	Sh.	In.
	22	1		III.	Oc.	Dis.		14	2		III.*	Sh.	Eg.
	22	35		I.	Sh.	In.		14	38		I.*	Tr.	In.
	23	45		I.	Tr.	In.		15	42		I.*	Sh.	Eg.
10	0	50		III.	Oc.	Re.		16	3		III.*	Tr.	In.
	0	52		I.	Sh.	Eg.		16	53		I.*	Tr.	Eg.
	2	1		I.	Tr.	Eg.		18	47		III.*	Tr.	Eg.
	11	10		II.	Sh.	In.	21	3	1		II.	Sh.	In.
	13	35		II.	Tr.	In.		5	32		II.	Tr.	In.
	13	50		II.*	Sh.	Eg.		5	40		II.	Sh.	Eg.
	16	9		II.*	Tr.	Eg.		8	5		II.	Tr.	Eg.
21	10	47	13.3	I.	Ec.	Dis.	21	10	47	13.3	I.	Ec.	Dis.
	14	14		I.*	Oc.	Re.		14	14		I.*	Oc.	Re.
	7	53		I.	Sh.	In.	22	7	53		I.	Sh.	In.
	9	7		I.	Tr.	In.		9	7		I.	Tr.	In.
	10	10		I.	Sh.	Eg.		10	10		I.	Sh.	Eg.
	11	22		I.	Tr.	Eg.		11	22		I.	Tr.	Eg.
	21	15	31.0	II.	Ec.	Dis.		21	15	31.0	II.	Ec.	Dis.
23	2	17		II.	Oc.	Re.		2	17		II.	Oc.	Re.
	5	15	26.7	I.	Ec.	Dis.		5	15	26.7	I.	Ec.	Dis.
	8	42		I.	Oc.	Re.		8	42		I.	Oc.	Re.
	21	40	30.0	IV.	Ec.	Dis.		21	40	30.0	IV.	Ec.	Dis.
	23	43	40.2	IV.	Ec.	Re.		23	43	40.2	IV.	Ec.	Re.
24	1	11	15.0	III.	Ec.	Dis.		1	11	15.0	III.	Ec.	Dis.
	2	21		I.	Sh.	In.		2	21		I.	Sh.	In.
	3	35		I.	Tr.	In.		3	35		I.	Tr.	In.
	4	1	47.0	III.	Ec.	Re.		4	1	47.0	III.	Ec.	Re.
	4	38		I.	Sh.	Eg.		4	38		I.	Sh.	Eg.
	5	50		I.	Tr.	Eg.		5	50		I.	Tr.	Eg.
	6	12		III.	Oc.	Dis.		6	12		III.	Oc.	Dis.
	8	54		III.	Oc.	Re.		8	54		III.	Oc.	Re.
	16	17		II.*	Sh.	In.		16	17		II.*	Sh.	In.
	18	50		II.*	Tr.	In.		18	50		II.*	Tr.	In.
	18	56		II.	Sh.	Eg.		18	56		II.	Sh.	Eg.
	21	23		II.	Tr.	Eg.		21	23		II.	Tr.	Eg.
	23	43	42.4	I.	Ec.	Dis.		23	43	42.4	I.	Ec.	Dis.
25	3	11		I.	Oc.	Re.		3	11		I.	Oc.	Re.
	20	50		I.	Sh.	In.		20	50		I.	Sh.	In.
	22	4		I.	Tr.	Eg.		22	4		I.	Tr.	Eg.
	23	7		I.	Sh.	Eg.		23	7		I.	Sh.	Eg.
26	0	19		I.	Tr.	Eg.		0	19		I.	Tr.	Eg.
	10	32	38.0	II.	Ec.	Dis.		10	32	38.0	II.	Ec.	Dis.
	15	36		II.	Oc.	Re.		15	36		II.	Oc.	Re.
	18	11	56.0	I.	Ec.	Dis.		18	11	56.0	I.	Ec.	Dis.
	21	39		I.	Oc.	Re.		21	39		I.	Oc.	Re.
27	14	57		III.	Ec.	Dis.		14	57		III.*	Sh.	In.
	15	18		III.	Ec.	Re.		15	18		I.*	Sh.	In.
	16	32		I.	Sh.	In.		16	32		I.*	Tr.	In.
	17	35		I.	Tr.	In.		17	35		I.*	Sh.	Eg.
	17	58		III.	Oc.	Dis.		17	58		III.*	Sh.	Eg.
	18	47		I.	Sh.	Eg.		18	47		I.*	Tr.	Eg.
	20	4		I.	Tr.	Eg.		20	4		III.	Tr.	In.
	22	45		III.	Oc.	Re.		22	45		III.	Tr.	Eg.
28	5	34		II.*	Sh.	In.		5	34		II.	Sh.	In.
	8	7		II.*	Tr.	In.		8	7		II.	Tr.	In.
	8	13		II.*	Sh.	Eg.		8	13		II.	Sh.	Eg.
	10	39		II.*	Tr.	Eg.		10	39		II.	Tr.	Eg.
	12	40	13.5	I.	Ec.	Dis.		12	40	13.5	I.	Ec.	Dis.
	16	7		I.	Oc.	Re.		16	7		I.*	Oc.	Re.
29	9	46		I.	Sh.	In.		9	46		I.	Sh.	In.
	11	1		I.	Tr.	In.		11	1		I.	Tr.	In.
	12	3		I.	Sh.	Eg.		12	3		I.	Sh.	Eg.
	13	16		I.	Tr.	Eg.		13	16		I.*	Tr.	Eg.
	23	50	30.5	II.	Ec.	Dis.		23	50	30.5	II.	Ec.	Dis.
30	4	53		II.	Oc.	Re.		4	53		II.	Oc.	Re.
	7	8	26.6	I.	Ec.	Dis.		7	8	26.6	I.	Ec.	Dis.
	10	35		I.	Oc.	Re.		10	35		I.	Oc.	Re.
31	4	15		I.	Sh.	In.		4	15		I.	Sh.	In.
	5	8	29.2	III.	Ec.	Dis.		5	8	29.2	III.	Ec.	Dis.
	5	29		I.	Tr.	In.		5	29		I.	Tr.	In.
	6	32		I.	Sh.	Eg.		6	32		I.	Sh.	Eg.
	7	44		I.*									

NOTE.—In. denotes ingress; Eg. egress; Dis. disappearance; Re. reappearance; Ec. eclipse.

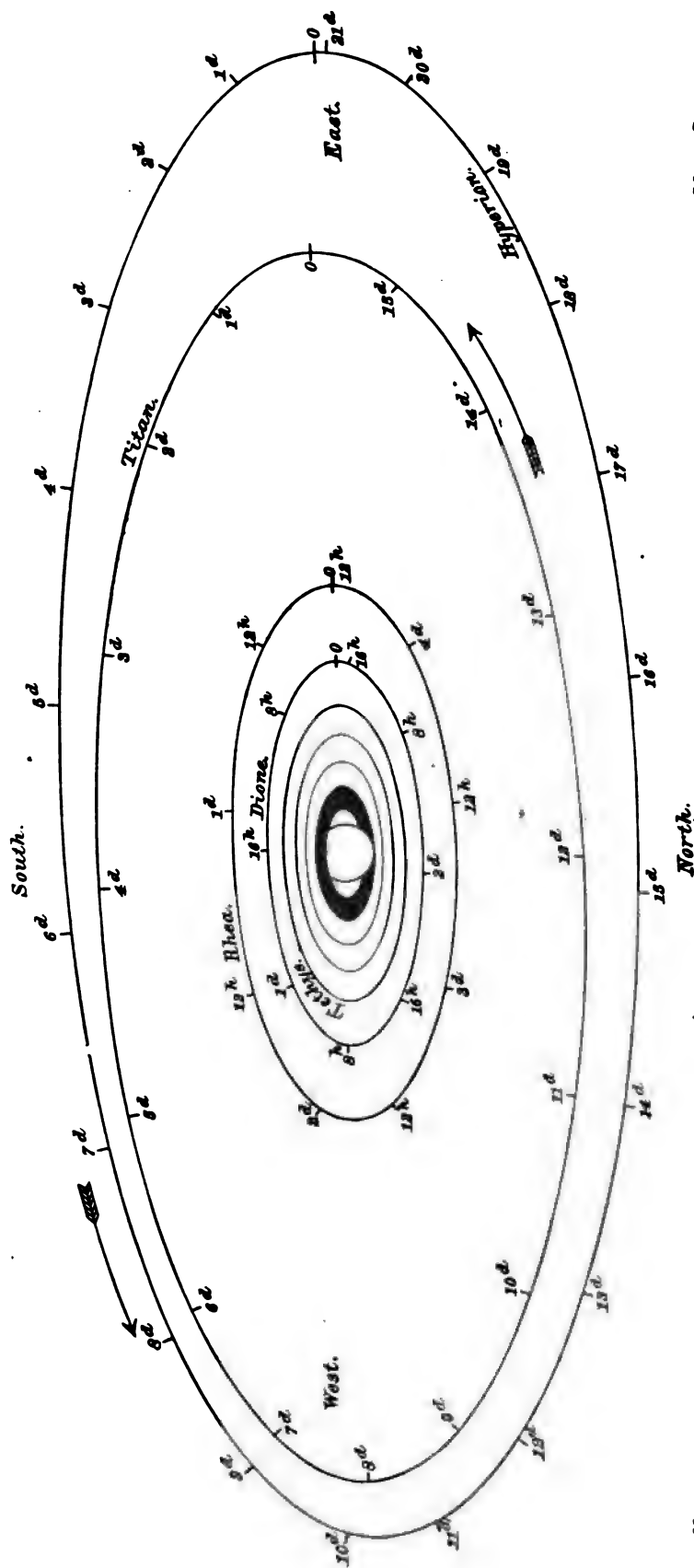
Oc. denotes occultation; Tr. transit of the satellite; Sh. transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

DECEMBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.*Configurations at 16^h 0^m for an Inverting Telescope.*

Day.	West.				East.			
1	4'	'3	'1	○				'2 ●
2	4'			'3 ○	'1	2'		
3	'4			1' ○		'3		
4	'4		'2	○ 1'			3'	
5		'4		○ '1	'2	3'		
6			'4 1'	○	2'			
7		3'	2'	○	'1			4' ●
8		'3	'1	'2 ○		'4		
9			'3	○	'1	'2	4	
10			'1 2'	○	'3		'4	
11		'2		○	'1	'3	'4	'4
12				○	'2	3'		4' '1 ●
13			1' 2'	○	2'		4'	
14		3'	2'	○	'1		4'	
15		'3	'1 2'	○	4'			
16			4' 3'	○	'1	'2		
17	○ 2'	4'	'1	○	'3			
18	4'		'2	○	'1		3	
19	4'			'1 ○	'2	3'		
20	○ 1' ○ 3' 4'			○	2'			
21	'4	3'	2'	○	'1			
22		'4 3	'2 1'	○				
23			4' 3'	○	'1	'2		
24			'1	○ 4' 3'				
25		2'		○	'1	'4 3		
26			'1	○ '2		3'	'4	
27				○ 1' 3'	2'			'4
28			3'	2' ○				4' '1 ●
29		3'	'2	'1 ○				4'
30			'3	○	'1	'2	4'	
31			'1	○ '32'	4'			



NAMES OF THE

SATELLITES

- I. Mimas.
- II. Enceladus.
- III. Tethys.
- IV. Dione.
- V. Rhea.
- VI. Titan.
- VII. Hyperion.
- VIII. Iapetus.

MEAN SYNODIC

PERIODS.

	d	h
I.	0	22.6
II.	1	8.9
III.	1	21.3
IV.	2	17.7
V.	4	12.5
VI.	15	23.3
VII.	21	7.6
VIII.	79	22.1

APPARENT ORBITS OF THE SEVEN INNER SATELLITES OF SATURN.

AT OPPOSITION IN 1897.

AS SEEN IN AN INVERTING TELESCOPE.

WASHINGTON MEAN TIME OF GREATEST ELONGATION, ETC.

In the diagram on the preceding page, the points of the orbits marked "o" are those of the eastern elongation, as seen in an inverting telescope. The apparent positions of a satellite at any time may be marked on the diagram by counting around the orbit the interval in days and hours which has elapsed since the last east elongation. The times of these elongations may be found from the following tables. Mimas can be seen only within a few hours of each elongation: the time of every elongation visible at Washington is therefore given. The times of other elongations of any satellite in the same direction may be found by adding or subtracting any multiple of the period. For the three outer satellites the times of elongation and conjunction are given. The following abbreviations are used:—

- E., East Elongation,
I., Inferior Conjunction (south of planet),
W., West Elongation,
S., Superior Conjunction (north of planet).

MIMAS.

Greatest Elongations Visible at Washington.

Jan.	d h	Feb.	d h	Apr.	d h	May	d h	May	d h	July	d h
4	17.9 W.	26	12.6 W.	6	15.1 E.	4	10.2 W.	30	8.1 E.	1	9.0 E.
5	16.5 W.	3	17.0 E.	7	13.8 E.	5	8.9 W.	2	15.3 W.	6	13.4 W.
12	18.2 E.	4	15.6 E.	8	12.4 E.	8	16.0 E.	3	13.9 W.	7	12.1 W.
13	16.8 E.	5	14.2 E.	9	11.0 E.	9	14.6 E.	4	12.5 W.	8	10.7 W.
20	18.4 W.	6	12.8 E.	13	16.7 W.	10	13.2 E.	5	11.1 W.	9	9.3 W.
21	17.1 W.	11	17.2 W.	14	15.4 W.	11	11.8 E.	6	9.7 W.	15	12.3 E.
22	15.7 W.	12	15.8 W.	15	14.0 W.	12	10.5 E.	7	8.3 W.	16	10.9 E.
29	17.3 E.	13	14.5 W.	16	12.6 W.	13	9.1 E.	11	14.1 E.	17	9.6 E.
30	16.0 E.	14	13.1 W.	17	11.2 W.	14	7.7 E.	12	12.7 E.	18	8.2 E.
31	14.6 E.	15	11.7 W.	18	9.8 W.	17	14.8 W.	13	11.3 E.	24	11.2 W.
Feb. 6	17.6 W.	20	16.1 E.	22	15.6 E.	18	13.4 W.	14	9.9 E.	25	9.8 W.
7	16.2 W.	21	14.7 E.	23	14.2 E.	19	12.1 W.	15	8.6 E.	26	8.4 W.
8	14.8 W.	22	13.3 E.	24	12.8 E.	20	10.7 W.	19	14.3 W.	Aug. 1	11.5 E.
14	17.9 E.	23	11.9 E.	25	11.4 E.	21	9.3 W.	20	12.9 W.	2	10.1 E.
15	16.5 E.	28	16.3 W.	26	10.0 E.	22	7.9 W.	21	11.6 W.	3	8.7 E.
16	15.1 E.	29	14.9 W.	27	8.6 E.	25	15.0 E.	22	10.2 W.	10	10.4 W.
17	13.7 E.	30	13.5 W.	30	15.8 W.	26	13.7 E.	23	8.8 W.	11	9.0 W.
23	16.7 W.	31	12.2 W.	May 1	14.4 W.	27	12.3 E.	28	13.2 E.	18	10.6 E.
24	15.3 W.	Apr. 1	10.8 W.	2	13.0 W.	28	10.9 E.	29	11.8 E.	19	9.3 E.
25	14.0 W.	5	16.5 E.	3	11.6 W.	29	9.5 E.	30	10.4 E.	20	7.9 E.

ENCELADUS.

Jan.	d h	Feb.	d h	Feb.	d h	Mar.	d h	Mar.	d h	Mar.	d h
21	2.9 E.	3	19.8 E.	17	12.7 E.	3	5.6 E.	16	22.4 E.	30	15.2 E.
22	11.8 E.	5	4.7 E.	18	21.6 E.	4	14.5 E.	18	7.3 E.	1	0.1 E.
23	20.7 E.	6	13.6 E.	20	6.5 E.	5	23.3 E.	19	16.2 E.	2	9.0 E.
25	5.6 E.	7	22.5 E.	21	15.4 E.	7	8.2 E.	21	1.0 E.	3	17.8 E.
26	14.5 E.	9	7.4 E.	23	0.3 E.	8	17.1 E.	22	9.9 E.	5	2.7 E.
27	23.4 E.	10	16.3 E.	24	9.2 E.	10	2.0 E.	23	18.8 E.	6	11.6 E.
29	8.3 E.	12	1.2 E.	25	18.0 E.	11	10.9 E.	25	3.7 E.	7	20.5 E.
30	17.2 E.	13	10.1 E.	27	2.9 E.	12	19.8 E.	26	12.6 E.	9	5.3 E.
Feb. 1	2.1 E.	14	19.0 E.	28	11.8 E.	14	4.6 E.	27	21.4 E.	10	14.2 E.
2	11.0 E.	16	3.8 E.	Mar. 1	20.7 E.	15	13.5 E.	29	6.3 E.	11	23.1 E.

WASHINGTON MEAN TIME OF GREATEST ELONGATION.

ENCELADUS—(Concluded.)

Apr. 13 8.0 E. 14 16.9 E. 16 1.7 E. 17 10.6 E. 18 19.5 E.	May 3 21.1 E. 5 6.0 E. 6 14.9 E. 7 23.7 E. 9 8.6 E.	May 24 10.2 E. 25 19.1 E. 27 4.0 E. 28 12.9 E. 29 21.7 E.	June 13 23.4 E. 15 8.3 E. 16 17.1 E. 18 2.0 E. 19 10.9 E.	July 4 12.6 E. 5 21.5 E. 7 6.4 E. 8 15.2 E. 10 0.1 E.	July 25 1.9 E. 26 10.8 E. 27 19.6 E. 29 4.5 E. 30 13.4 E.
20 4.4 E. 21 13.2 E. 22 22.1 E. 24 7.0 E. 25 15.9 E.	10 17.5 E. 12 2.4 E. 13 11.2 E. 14 20.1 E. 16 5.0 E.	31 6.6 E. June 1 15.5 E. 3 0.4 E. 4 9.2 E. 5 18.1 E.	20 19.8 E. 22 4.7 E. 23 13.5 E. 24 22.4 E. 26 7.3 E.	11 9.0 E. 12 17.9 E. 14 2.8 E. 15 11.7 E. 16 20.6 E.	31 22.3 E. Aug. 2 7.2 E. 3 16.1 E. 5 1.0 E. 6 9.9 E.
27 0.7 E. 28 9.6 E. 29 18.5 E. May 1 3.4 E. 2 12.2 E.	17 13.9 E. 18 22.7 E. 20 7.6 E. 21 16.5 E. 23 1.4 E.	7 3.0 E. 8 11.9 E. 9 20.8 E. 11 5.6 E. 12 14.5 E.	27 16.2 E. 29 1.1 E. 30 9.9 E. July 1 18.8 E. 3 3.7 E.	18 5.4 E. 19 14.3 E. 20 23.2 E. 22 8.1 E. 23 17.0 E.	7 18.8 E. 9 3.6 E. 10 12.5 E. 11 21.4 E. 13 6.3 E.

TETHYS.

Jan. 11 1.6 E. 12 22.9 E. 14 20.2 E. 16 17.5 E. 18 14.9 E.	Feb. 15 22.6 E. 17 19.9 E. 19 17.2 E. 21 14.5 E. 23 11.9 E.	Mar. 23 19.4 E. 25 16.7 E. 27 14.0 E. 29 11.3 E. 31 8.6 E.	Apr. 28 16.0 E. 30 13.3 E. May 2 10.6 E. 4 7.8 E. 6 5.1 E.	June 3 12.5 E. 5 9.7 E. 7 7.0 E. 9 4.3 E. 11 1.6 E.	July 9 9.1 E. 11 6.4 E. 13 3.7 E. 15 1.0 E. 16 22.3 E.
20 12.2 E. 22 9.5 E. 24 6.8 E. 26 4.2 E. 28 1.5 E.	25 9.2 E. 27 6.5 E. Mar. 1 3.8 E. 3 1.1 E. 4 22.4 E.	Apr. 2 5.9 E. 4 3.2 E. 6 0.5 E. 7 21.8 E. 9 19.1 E.	8 2.4 E. 9 23.7 E. 11 21.0 E. 13 18.3 E. 15 15.6 E.	12 22.9 E. 14 20.2 E. 16 17.5 E. 18 14.8 E. 20 12.1 E.	18 19.6 E. 20 16.9 E. 22 14.2 E. 24 11.5 E. 26 8.8 E.
29 22.8 E. 31 20.1 E. Feb. 2 17.4 E. 4 14.7 E. 6 12.0 E.	6 19.7 E. 8 17.0 E. 10 14.3 E. 12 11.6 E. 14 8.9 E.	11 16.4 E. 13 13.7 E. 15 10.9 E. 17 8.2 E. 19 5.5 E.	17 12.9 E. 19 10.1 E. 21 7.4 E. 23 4.7 E. 25 2.0 E.	22 9.4 E. 24 6.7 E. 26 4.0 E. 28 1.3 E. 29 22.6 E.	28 6.2 E. 30 3.5 E. Aug. 1 0.8 E. 2 22.1 E. 4 19.4 E.
8 9.4 E. 10 6.7 E. 12 4.0 E. 14 1.3 E.	16 6.2 E. 18 3.5 E. 20 0.8 E. 21 22.1 E.	21 2.8 E. 23 0.1 E. 24 21.4 E. 26 18.7 E.	26 23.3 E. 28 20.6 E. 30 17.9 E. June 1 15.2 E.	July 1 19.9 E. 3 17.2 E. 5 14.5 E. 7 11.8 E.	6 16.7 E. 8 14.0 E. 10 11.3 E. 12 8.7 E.

DIONE.

Jan. 20 6.3 E. 23 0.0 E. 25 17.7 E. 28 11.4 E. 31 5.2 E.	Feb. 22 2.8 E. 24 20.5 E. 27 14.1 E. Mar. 2 7.8 E. 5 1.5 E.	Mar. 26 22.9 E. 29 16.6 E. Apr. 1 10.3 E. 4 3.9 E. 6 21.6 E.	Apr. 28 18.8 E. May 1 12.4 E. 4 6.1 E. 6 23.7 E. 9 17.4 E.	May 31 14.6 E. June 3 8.2 E. 6 1.9 E. 8 19.5 E. 11 13.2 E.	July 3 10.5 E. 6 4.1 E. 8 21.8 E. 11 15.5 E. 14 9.2 E.
Feb. 2 22.9 E. 5 16.6 E. 8 10.3 E. 11 4.0 E. 13 21.7 E.	7 19.2 E. 10 12.9 E. 13 6.6 E. 16 0.2 E. 18 17.9 E.	9 15.2 E. 12 8.9 E. 15 2.5 E. 17 20.2 E. 20 13.8 E.	12 11.0 E. 15 4.7 E. 17 22.3 E. 20 16.0 E. 23 9.6 E.	14 6.8 E. 17 0.5 E. 19 18.2 E. 22 11.8 E. 25 5.5 E.	17 2.8 E. 19 20.5 E. 22 14.2 E. 25 7.9 E. 28 1.6 E.
16 15.4 E. 19 9.1 E.	21 11.6 E. 24 5.2 E.	23 7.5 E. 26 1.2 E.	26 3.3 E. 28 20.9 E.	27 23.1 E. 30 16.8 E.	30 19.3 E. Aug. 2 13.0 E.

RHEA.		TITAN.		HYPERION.	
Jan. d h	May d h	Jan. d h	Apr. d h	Jan. d h	May d h
27 12.2 E.	1 21.2 E.	28 22.7 E.	26 16.9 W.	19 0.6 E.	16 2.7 W.
27 0.7 E.	6 9.5 E.	1 20.0 I.	30 16.2 S.	24 19.7 I.	20 20.1 S.
31 13.2 E.	10 21.8 E.	6 0.7 W.	May 4 13.5 E.	29 16.1 W.	26 19.6 E.
Feb. 5 1.7 E.	15 10.1 E.	10 0.3 S.	8 10.3 I.	Feb. 3 10.3 S.	June 1 11.6 I.
9 14.2 E.	19 22.4 E.	13 22.3 E.	12 14.2 W.	9 11.7 E.	6 6.4 W.
14 2.7 E.	24 10.7 E.	17 19.5 I.	16 13.7 S.	15 5.9 I.	10 23.9 S.
18 15.2 E.	28 23.0 E.	22 0.1 W.	20 10.9 E.	20 2.0 W.	16 23.2 E.
23 3.6 E.	June 2 11.3 E.	25 23.5 S.	24 7.6 I.	24 20.0 S.	22 15.3 I.
27 16.0 E.	6 23.7 E.	Mar. 1 21.4 E.	28 11.6 W.	Mar. 2 21.2 E.	27 10.0 W.
Mar. 4 4.5 E.	11 12.0 E.	5 18.5 I.	June 1 11.1 S.	8 14.5 I.	July 2 3.7 S.
8 16.9 E.	16 0.3 E.	9 22.9 W.	5 8.2 E.	13 10.4 W.	8 3.0 E.
13 5.3 E.	20 12.7 E.	13 22.3 S.	9 5.1 I.	18 4.2 S.	13 19.2 I.
17 17.7 E.	25 1.0 E.	17 20.0 E.	13 9.1 W.	24 4.9 E.	18 14.0 W.
22 6.1 E.	29 13.4 E.	21 17.0 I.	17 8.8 S.	29 21.6 I.	23 8.0 S.
26 18.4 E.	July 4 1.7 E.	25 21.3 W.	21 5.9 E.	Apr. 3 17.1 W.	29 7.5 E.
31 6.8 E.	8 14.1 E.	29 20.6 S.	25 2.7 I.	8 10.8 S.	Aug. 3 23.6 I.
Apr. 4 19.2 E.	13 2.5 E.	Apr. 2 18.2 E.	29 6.8 W.	14 11.0 E.	8 18.6 W.
9 7.5 E.	17 14.9 E.	6 15.1 I.	July 3 6.7 S.	20 3.2 I.	13 12.9 S.
13 19.9 E.	22 3.3 E.	10 19.3 W.	7 3.8 E.	24 22.4 W.	19 12.7 E.
18 8.2 E.	26 15.8 E.	14 18.5 S.	11 0.8 I.	29 15.9 S.	25 4.7 I.
22 20.5 E.	31 4.2 E.	18 16.0 E.	15 4.9 W.	May 5 15.8 E.	30 0.0 W.
27 8.8 E.	Aug. 4 16.6 E.	22 12.8 I.	19 5.0 S.	11 7.8 I.	Sept. 3 18.7 S.

IAPETUS.

Jan. d h	Feb. d h	Mar. d h	May d h	June d h	July d h
1 19.7 W.	11 9.6 E.	22 21.7 W.	1 9.1 E.	9 2.8 W.	18 17.1 E.
21 20.5 S.	Mar. 1 16.3 I.	Apr. 11 9.6 S.	19 5.9 I.	28 12.3 S.	Aug. 5 20.7 I.

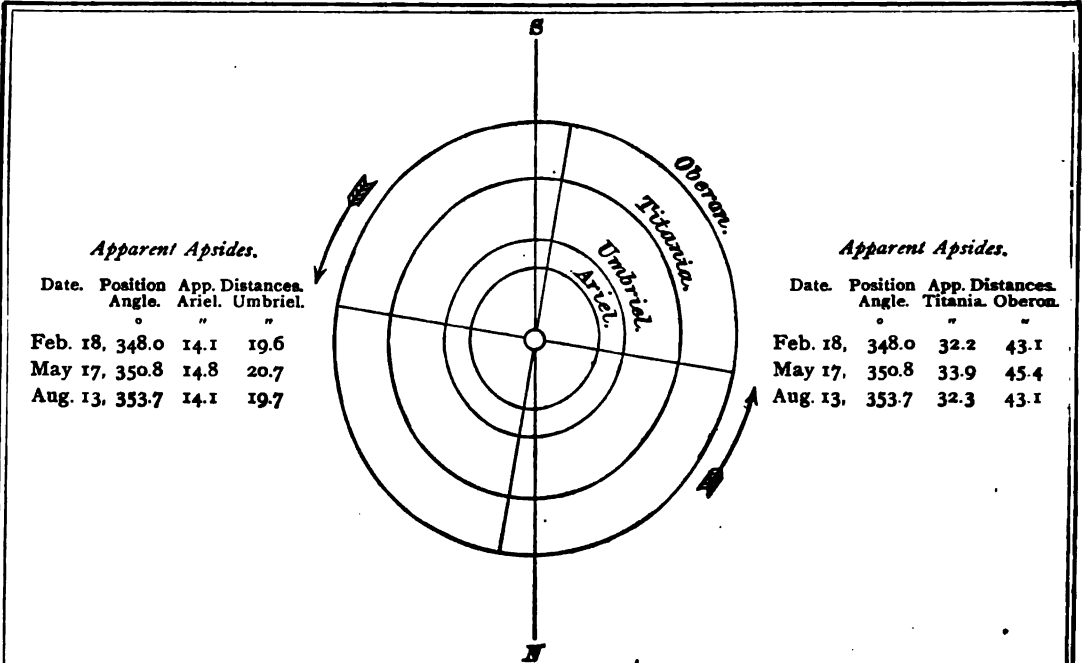
THE APPARENT ELEMENTS OF SATURN'S RINGS.

Greenwich Mean Noon.	Outer Major Axis.	Outer Minor Axis.	Inclination of Northern Semi-Minor Axis to Circle of Declination from North to East.	The Elevation of the Earth above the Plane of the Ring.	The Elevation of the Sun above the Plane of the Ring.	Earth's Longitude from Saturn counted on Plane of Ring from the Ring's Ascending Node on the—	
						Equator.	Ecliptic.
Jan. 0	35.28	14.45	+2 24.3	+24 10.7	+23 15.3	289 13.4	246 51.9
20	36.17	14.97	+2 38.1	+24 27.1	+23 24.1	291 6.2	248 44.9
Feb. 9	37.31	15.53	+2 47.8	+24 36.4	+23 32.6	292 26.7	250 5.4
Mar. 1	38.58	16.09	+2 52.7	+24 38.7	+23 41.0	293 7.2	250 46.0
21	39.85	16.58	+2 52.2	+24 34.8	+23 49.2	293 4.0	250 42.8
Apr. 10	40.95	16.93	+2 46.7	+24 25.4	+23 57.2	292 18.9	249 57.8
30	41.67	17.08	+2 37.3	+24 12.0	+24 5.1	291 1.5	248 40.5
May 20	41.89	17.00	+2 25.7	+23 56.7	+24 12.7	289 27.0	247 6.2
June 9	41.55	16.71	+2 14.4	+23 42.5	+24 20.3	287 54.7	245 34.1
29	40.74	16.28	+2 5.5	+23 32.8	+24 27.6	286 42.7	244 22.2
July 19	39.60	15.79	+2 0.7	+23 30.0	+24 34.8	286 4.0	243 43.6
Aug. 8	38.33	15.34	+2 0.9	+23 35.4	+24 41.8	286 5.3	243 44.9
28	37.08	14.97	+2 6.2	+23 48.5	+24 48.6	286 47.4	244 27.1
Sept. 17	35.97	14.71	+2 16.2	+24 7.9	+24 55.2	288 7.1	245 46.9
Oct. 7	35.09	14.56	+2 29.9	+24 30.8	+25 1.6	289 58.5	247 38.3
27	34.48	14.53	+2 46.5	+24 54.9	+25 7.8	292 13.6	249 53.6
Nov. 16	34.19	14.61	+3 4.7	+25 17.8	+25 14.0	294 43.7	252 23.9
Dec. 6	34.21	14.79	+3 23.2	+25 37.4	+25 19.8	297 19.4	254 59.7
26	34.55	15.08	+3 40.8	+25 52.7	+25 25.5	299 50.2	257 30.7
31	34.68	15.17	+3 44.9	+25 55.7	+25 26.9	300 25.9	258 6.4

The factor to be multiplied by a and b to obtain the axes of—

The inner ellipse of the outer ring = 0.8801, log factor = 9.9445
The outer ellipse of the inner ring = 0.8599, log factor = 9.9344
The inner ellipse of the inner ring = 0.6650, log factor = 9.8228
The inner ellipse of the dusky ring = 0.5486, log factor = 9.7392

NOTE.—The positive sign of l indicates that the visible surface of the ring is the northern one.



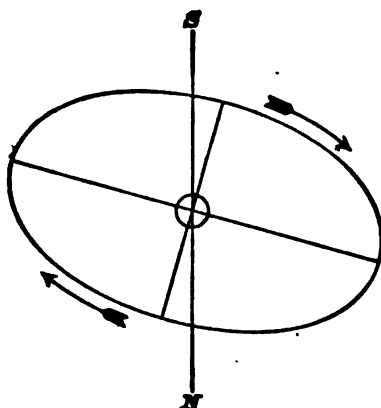
APPARENT ORBITS OF THE SATELLITES OF URANUS IN 1897.
AS SEEN IN AN INVERTING TELESCOPE.

WASHINGTON MEAN TIME OF GREATEST ELONGATION.

ARIEL.		UMBRIEL.		TITANIA.		OBERON.
North.	South.	North.	South.	North.	South.	North and South.
d h	d h	d h	d h	d h	d h	d h
Feb. 14 4.2	Feb. 17 22.9	Feb. 7 10.7	Feb. 9 12.4	Jan. 31 15.0	Feb. 4 23.4	Feb. 22 16.8 S.
21 17.7	25 12.4	15 17.5	17 19.2	Feb. 9 7.7	13 16.1	Mar. 1 10.4 N.
Mar. 1 7.1	Mar. 5 1.8	24 0.4	26 2.1	18 0.5	22 8.9	8 4.0 S.
8 20.6	12 15.3	Mar. 4 7.3	Mar. 6 9.0	26 17.4	Mar. 3 1.8	14 21.6 N.
16 10.0	20 4.8	12 14.2	14 16.0	Mar. 7 10.3	11 18.8	21 15.2 S.
23 23.5	27 18.3	20 21.2	22 22.9	16 3.3	20 11.8	28 8.9 N.
31 13.0	Apr. 4 7.7	29 4.1	31 5.9	24 20.3	29 4.8	Apr. 4 2.6 S.
Apr. 8 2.5	11 21.2	Apr. 6 11.1	Apr. 8 12.8	Apr. 2 13.4	Apr. 6 21.9	10 20.4 N.
15 16.0	19 10.8	14 18.1	16 19.8	11 6.5	15 15.0	17 14.2 S.
23 5.5	27 0.3	23 1.1	25 2.9	19 23.6	24 8.2	24 8.0 N.
30 19.0	May 4 13.8	May 1 8.1	May 3 9.9	28 16.8	May 3 1.4	May 1 1.9 S.
May 8 8.6	12 3.3	9 15.1	11 16.9	May 7 10.0	11 18.5	7 19.7 N.
15 22.1	19 16.8	17 22.2	19 23.9	16 3.1	20 11.7	14 13.4 S.
23 11.6	27 6.4	26 5.2	28 7.0	24 20.3	29 4.9	21 7.3 N.
31 1.1	June 3 19.9	June 3 12.2	June 5 14.0	June 2 13.5	June 6 22.1	28 1.2 S.
June 7 14.7	11 9.5	11 19.3	13 21.0	11 6.7	15 15.3	June 3 19.1 N.
15 4.2	18 23.0	20 2.3	22 4.1	19 23.9	24 8.4	10 13.0 S.
22 17.7	26 12.5	28 9.3	30 11.0	28 16.9	July 3 1.5	17 6.8 N.
30 7.2	July 4 2.0	July 6 16.3	July 8 18.0	July 7 10.0	11 18.5	24 0.5 S.
July 7 20.8	11 15.5	14 23.3	17 1.0	16 3.1	20 11.6	30 18.2 N.
15 10.3	19 5.0	23 6.2	25 8.0	24 20.1	29 4.6	July 7 11.9 S.
22 23.8	26 18.5	31 13.2	Aug. 2 14.9	Aug. 2 13.1	Aug. 6 21.5	14 5.6 N.
30 13.2	Aug. 3 8.0	Aug. 8 20.1	10 21.8	11 6.0	15 14.4	20 23.3 S.
Aug. 7 2.7	10 21.5	17 3.0	19 4.8	19 22.9	24 7.4	27 16.9 N.
14 16.2	18 10.9	25 9.9	27 11.7	28 15.8	Sept. 2 0.3	Aug. 3 10.5 S.

Period of Ariel,	d h	Period of Titania,	d h
Period of Umbriel,	2 12.489	Period of Oberon,	8 16.942
	4 3.460		13 11.119

NOTE.—For Ariel only every third elongation is given, and for Umbriel every alternate one. The intermediate ones may be found by adding multiples of the period of the satellite.



Date.	Position Angle of Apsis.	Apparent Distance at Apsis.
Mar. 6,	252.8	+ 16.4
Aug. 29,	258.0	+ 16.3
Dec. 3.	257.0	+ 16.9

*APPARENT ORBIT OF THE SATELLITE OF NEPTUNE IN 1897,
AS SEEN IN AN INVERTING TELESCOPE.*

WASHINGTON MEAN TIME OF GREATEST ELONGATION.

East.	West.	East.	West.	East.	West.
Jan. d h 1 19.5 7 16.6 13 13.7 19 10.8 25 7.9	Jan. d h 4 18.0 10 15.2 16 12.3 22 9.4 28 6.5	Mar. d h 13 8.5 19 5.6 25 2.6 Sept. 5 13.6 11 10.6	Mar. d h 16 7.0 22 4.1 28 1.1 Sept. 8 12.1 14 9.1	Oct. d h 28 11.0 Nov. 3 8.1 9 5.2 15 2.3 20 23.4	Oct. d h 31 9.5 Nov. 6 6.6 12 3.7 18 0.8 23 21.9
Feb. 31 5.0 6 2.1 11 23.2 17 20.3 23 17.4	Feb. 3 3.6 9 0.7 14 21.8 20 18.8 26 15.9	17 7.6 23 4.6 29 1.7 Oct. 4 22.7 10 19.8	20 6.1 26 3.2 2 0.2 Oct. 7 21.2 13 18.3	26 20.5 Dec. 2 17.6 8 14.7 14 11.8 20 9.0	29 19.0 Dec. 5 16.2 11 13.3 17 10.4 23 7.5
Mar. 1 14.4 7 11.5	Mar. 4 13.0 10 10.0	16 16.8 22 13.9	19 15.4 25 12.4	26 6.1 Jan. 1 3.2	29 4.7 Jan. 4 1.8

The above times are those of each passage of the satellite through the apsis of its apparent orbit. The position of the satellite at any other time may be found by measuring around the orbit from the apsis last passed through, remembering that the radius vector of the satellite describes equal areas in equal times.

Period of the satellite of Neptune, $5^d 21^h.045$.

NOTE.—In the preceding diagrams the central circle represents the planet and is on the same scale as the orbits.

WASHINGTON MEAN TIME.

PLANETARY CONSTELLATIONS.

d h m			d h m		
Jan. 4	0	34	♂ ☿ C	.....	♂ - 0 8
5	23	-	♂ ☿	Greatest elong. E.	19 9
6	2	14	♂ ♀ C	.....	♀ - 3 7
9	13	-	♂	in ♄	
12	12	-	♂	Stationary.	
14	4	-	♂	in Perihelion.	
14	10	21	♂ ☿ C	.....	♂ - 1 42
14	23	18	♂ ♀ C	.....	♀ - 5 50
15	14	-	♂	Stationary.	
21	4	6	♂ ♀ C	.....	♀ + 3 46
21	22	-	♂ ☿	Inferior.	
24	11	-	♂ ☿ C	Greatest Hel. Lat. N.	
26	18	49	♂ ☿ C	.....	♂ + 5 29
26	20	53	♂ ♀ C	.....	♀ + 7 19
29	18	-	♀	in ♄	
30	15	45	♂ ☿ C	.....	♂ + 5 11
Feb. 1	-	-	☿	eclipsed, vis. at Wash.	
2	11	-	♂ ☿	Stationary.	
5	5	43	♂ ☿ C	.....	♀ - 3 48
11	2	43	♂ ☿ C	.....	♂ - 1 51
11	7	28	♂ ♀ C	.....	♀ - 5 53
15	11	-	♂	Greatest elong. W.	26 23
15	14	-	♀	Greatest elong. E.	46 39
16	14	-	☿ ☿		
16	22	-	♂	in ♄	
17	7	3	♂ ♀ C	.....	♀ + 3 33
18	3	-	☿ ☿		
19	4	-	♂ ☿ ♀	.....	♂ + 4 2
22	21	-	♂ ♀ ☿	.....	♂ + 5 27
23	1	1	♂ ☿ C	.....	♂ + 5 27
23	4	15	♂ ♀ C	.....	♀ + 7 19
25	16	-	♂	Stationary.	
27	3	-	♂	in Aphelion.	
28	20	7	♂ ☿ C	.....	♂ - 1 57
Mar. 2	22	-	♂	Stationary.	
4	8	-	♀	in Perihelion.	
6	20	30	♂ ♀ C	.....	♀ - 1 25
7	2	-	☿ ☿		
9	10	-	♂	Stationary.	
10	15	50	♂ ♀ C	.....	♀ - 5 45
11	6	43	♂ ☿ C	.....	♂ - 1 34
16	11	22	♂ ♀ C	.....	♀ + 3 15
18	5	-	☿ ☿		
19	12	-	♂	Greatest Hel. Lat. S.	
19	15	-	♂	enters ♏, Spring com.	
21	10	-	♀	Greatest brilliancy.	
22	7	23	♂ ☿ C	.....	♂ + 5 18
22	10	48	♂ ♀ C	.....	♀ + 7 15
26	6	-	♀	Greatest Hel. Lat. N.	
Apr. 1	10	-	♂ ☿	Superior.	
1	16	52	♂ ☿ C	.....	♂ - 5 54
4	6	52	♂ ♀ C	.....	♀ + 1 35
Apr. 6	11	-	♀	Stationary.	
6	23	45	♂ ♀ C	.....	♀ - 5 29
7	13	-	♂	in ♄	
7	21	-	♂ ☿	Geminorum.	♂ - 0 2
8	15	52	♂ ☿ C	.....	♂ - 0 50
12	3	-	♂	in Perihelion.	
12	17	56	♂ ♀ C	.....	♀ + 3 8
16	8	-	♂	Greatest Hel. Lat. N.	
16	16	-	♂ ♀	.....	♂ - 5 13
18	15	20	♂ ☿ C	.....	♂ + 5 9
18	18	2	♂ ♀ C	.....	♀ + 7 10
22	11	-	♂	Greatest Hel. Lat. N.	
25	23	-	♀	Stationary.	
27	22	-	♂	Greatest elong. E.	20 43
28	1	-	♂ ☿	Inferior.	
30	18	20	♂ ♀ C	.....	♀ - 0 22
May 2	23	26	♂ ☿ C	.....	♂ - 2 6
4	7	16	♂ ♀ C	.....	♀ - 5 14
7	4	35	♂ ☿ C	.....	♂ + 0 22
9	17	-	♂	Stationary.	
10	2	42	♂ ♀ C	.....	♀ + 3 20
15	22	-	♂	in ♄	
16	0	26	♂ ☿ C	.....	♂ + 5 7
16	1	54	♂ ♀ C	.....	♀ + 7 11
17	1	-	♂ ☿		
17	9	-	♀	Stationary.	
17	12	-	♂ ☿		
20	13	-	♂ ☿	Inferior.	
21	7	-	♀	in ♄	
21	11	-	☿ ☿		
21	12	-	♂	in Aphelion.	
24	19	-	♂ ☿ ♄	Canceri . . .	♂ - 0 2
26	3	-	♂	in Aphelion.	
27	18	6	♂ ♀ C	.....	♀ - 6 32
29	19	2	♂ ♀ C	.....	♂ - 8 27
31	14	55	♂ ♀ C	.....	♀ - 5 6
June 1	19	-	♂	Stationary.	
3	12	-	♀	Greatest brilliancy.	
4	18	10	♂ ☿ C	.....	♂ + 1 49
6	13	30	♂ ♀ C	.....	♀ + 3 43
10	0	-	♂ ☿		
12	9	17	♂ ☿ C	.....	♂ + 5 12
12	9	31	♂ ♀ C	.....	♀ + 7 15
15	7	-	♂	Greatest elong. W.	23 4
15	12	-	♂	Greatest Hel. Lat. S.	
18	8	-	♂ ♀ ☿	.....	♀ + 2 3
20	11	-	☿	enters ♊, Summer com.	
24	15	-	♀	in Aphelion.	
25	13	4	♂ ♀ C	.....	♀ - 8 38
27	19	26	♂ ☿ C	.....	♂ - 5 11
27	23	14	♂ ♀ C	.....	♀ - 5 3
29	0	-	♂ ♀ ♀	.....	♂ + 0 14

WASHINGTON MEAN TIME.

PLANETARY CONSTELLATIONS.

POSITIONS OF OBSERVATORIES.

(North Latitudes and West Longitudes are Considered Positive.)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ	Longitude.	
				From Washington.	From Greenwich.
				h m s	h m s
Abastuman . . .	+ 41 42 24	- 11 35.5	9.999351	- 7 59 37	- 2 51 25
Åbo . . .	+ 60 26 56.8	- 10 2.1	9.998887	- 6 37 18.45	- 1 29 6.41
Adelaide . . .	- 34 55 33.8	+ 10 56.8	9.999520	- 14 22 32.3	- 9 14 20.3
Albany . . .	+ 42 39 49.5	- 11 38.0	9.999326	- 0 13 12.87	+ 4 54 59.17
Alfred (<i>N. Y.</i>) . . .	+ 42 15 19.8	- 11 37.0	9.999337	+ 0 2 55.00	+ 5 11 7.04
Algiers (<i>Old Obs.</i>) . . .	+ 36 44 0	- 11 10.8	9.999476	- 5 20 28.8	- 0 12 16.8
Algiers (<i>New Obs.</i>) . . .	+ 36 47 50	- 11 11.3	9.999474	- 5 20 20.59	- 0 12 8.55
Allegheny . . .	+ 40 27 41.6	- 11 31.3	9.999383	+ 0 11 50.89	+ 5 20 2.93
Altona . . .	+ 53 32 45.3	- 11 10.2	9.999049	- 5 47 58.39	- 0 39 46.35
Amherst . . .	+ 42 22 17.1	- 11 37.3	9.999334	- 0 18 7.37	+ 4 50 4.67
Annapolis . . .	+ 38 58 53.5	- 11 24.5	9.999420	- 0 2 15.55	+ 5 5 56.49
Ann Arbor . . .	+ 42 16 48.0	- 11 37.0	9.999336	+ 0 26 43.15	+ 5 34 55.19
Arequipa (<i>Harvard</i>) . . .	- 16 24	+ 6 18.4	9.999884	- 0 22 42	+ 4 45 30
Armagh . . .	+ 54 21 12.7	- 11 4.2	9.999029	- 4 41 36.6	+ 0 26 35.4
Athens . . .	+ 37 58 20.0	- 11 18.9	9.999445	- 6 43 7.7	- 1 34 55.7
Bamberg . . .	+ 49 53 5	- 11 30.7	9.999141	- 5 51 45.4	- 0 43 33.4
Beloit . . .	+ 42 30 9.0	- 11 37.6	9.999331	+ 0 47 55.3	+ 5 56 7.3
Bergen . . .	+ 60 23 54	- 10 2.7	9.998888	- 5 29 24.8	- 0 21 12.8
Berkeley . . .	+ 37 52 21.7	- 11 18.3	9.999448	+ 3 0 50.33	+ 8 9 2.37
Berlin (<i>Urania</i>) . . .	+ 52 31 31.8	- 11 17.0	9.999075	- 6 1 39.60	- 0 53 27.56
Berlin . . .	+ 52 30 16.7	- 11 17.1	9.999075	- 6 1 46.95	- 0 53 34.91
Berne . . .	+ 46 57 8.7	- 11 39.0	9.999216	- 5 37 57.7	- 0 29 45.7
Besançon . . .	+ 47 14 59.0	- 11 38.5	9.999208	- 5 32 9.2	- 0 23 57.2
Bethlehem . . .	+ 40 36 23.4	- 11 31.9	9.999379	- 0 6 40.19	+ 5 1 31.85
Birr Castle . . .	+ 53 5 47.0	- 11 13.3	9.999060	- 4 36 31.1	+ 0 31 40.9
Bogota . . .	+ 4 35 48	- 1 51.5	9.999991	- 0 11 13	+ 4 56 59
Bologna . . .	+ 44 29 47.0	- 11 40.3	9.999279	- 5 53 36.9	- 0 45 24.9
Bombay . . .	+ 18 53 45	- 7 8.1	9.999847	- 9 59 27.7	- 4 51 15.7
Bonn . . .	+ 50 43 45.0	- 11 26.9	9.999120	- 5 36 35.33	- 0 28 23.29
Bordeaux . . .	+ 44 50 7.2	- 11 40.4	9.999271	- 5 6 6.63	+ 0 2 5.41
Bothkamp . . .	+ 54 12 9.6	- 11 5.3	9.999033	- 5 48 43.2	- 0 40 31.2
Breslau . . .	+ 51 6 56.5	- 11 25.0	9.999110	- 6 16 20.88	- 1 8 8.84
Brisbane . . .	- 27 28 0.0	+ 9 32.2	9.999689	- 15 20 17.8	- 10 12 5.8
Brussels (<i>Uccle</i>) . . .	+ 50 47 53	- 11 26.6	9.999118	- 5 25 38.2	- 0 17 26.2
Brussels . . .	+ 50 51 10.7	- 11 26.3	9.999117	- 5 25 40.9	- 0 17 28.9
Budapest . . .	+ 47 29 34.7	- 11 38.0	9.999202	- 6 24 27.4	- 1 16 15.4
Cairo . . .	+ 30 4 38.2	- 10 6.5	9.999632	- 7 13 20.95	- 2 5 8.91
Cambridge (<i>England</i>) . . .	+ 52 12 51.6	- 11 18.9	9.999082	- 5 8 34.79	- 0 0 22.75
Cambridge (<i>Mass.</i>) . . .	+ 42 22 47.6	- 11 37.3	9.999334	- 0 23 41.05	+ 4 44 30.99
Cape of Good Hope . . .	- 33 56 3.5	+ 10 48.0	9.999543	- 6 22 6.78	- 1 13 54.74
Catania . . .	+ 37 30	- 11 16.0	9.999457	- 6 7 52	- 0 59 40
Chapultepec . . .	+ 19 25 17.5	- 7 18.2	9.999838	+ 1 28 26.20	+ 6 36 38.24
Charkow . . .	+ 50 0 10.2	- 11 30.2	9.999138	- 7 33 6.7	- 2 24 54.7
Charlottesville . . .	+ 38 2 1.2	- 11 19.3	9.999444	+ 0 5 53.18	+ 5 14 5.22
Chicago (<i>Old Obs.</i>) . . .	+ 41 50 1.0	- 11 35.9	9.999348	+ 0 42 14.69	+ 5 50 26.73

POSITIONS OF OBSERVATORIES.

(North Latitudes and West Longitudes are Considered Positive.)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ .	Longitude.	
				From Washington.	From Greenwich.
	° ' "	° ' "		h m s	h m s
Christiania	+ 59 54 44.0	- 10 8.7	9.998899	- 5 51 5.89	- 0 42 53.85
Cincinnati (<i>New Obs.</i>) .	+ 39 8 19.5	- 11 25.4	9.999416	+ 0 29 29.25	+ 5 37 41.29
Cincinnati (<i>Old Obs.</i>) .	+ 39 6 26.5	- 11 25.2	9.999417	+ 0 29 47.01	+ 5 37 59.05
Clinton	+ 43 3 17.0	- 11 38.7	9.999316	- 0 6 34.59	+ 5 1 37.45
Coimbra	+ 40 12 25.8	- 11 30.3	9.999389	- 4 34 37.9	+ 0 33 34.1
Columbia (<i>Missouri</i>) . .	+ 38 56 51.6	- 11 24.4	9.999421	+ 1 1 6.18	+ 6 9 18.22
Copenhagen	+ 55 41 12.9	- 10 53.1	9.998997	- 5 58 30.96	- 0 50 18.92
Cordoba	- 31 25 15.5	+ 10 22.2	9.999602	- 0 51 23.8	+ 4 16 48.2
Cracow	+ 50 3 51.9	- 11 29.9	9.999137	- 6 28 2.41	- 1 19 50.37
Crowborough	+ 51 3 7	- 11 25.4	9.999112	- 5 8 49.3	- 0 0 37.3
Dantzic	+ 54 21 18.0	- 11 4.1	9.999029	- 6 22 51.6	- 1 14 39.6
Denver	+ 39 40 36.4	- 11 27.9	9.999402	+ 1 51 35.59	+ 6 59 47.63
Dorpat	+ 58 22 47.1	- 10 26.4	9.998934	- 6 55 5.5	- 1 46 53.5
Dresden	+ 51 2 16.8	- 11 25.4	9.999112	- 6 3 6.88	- 0 54 54.84
Dublin	+ 53 23 13.0	- 11 11.3	9.999053	- 4 42 50.9	+ 0 25 21.1
Dun Echt	+ 57 9 36	- 10 39.2	9.998962	- 4 58 32.0	+ 0 9 40.0
Durham	+ 54 46 6.2	- 11 0.9	9.999019	- 5 1 52.2	+ 0 6 19.8
Düsseldorf	+ 51 12 25.0	- 11 24.6	9.999108	- 5 35 17.5	- 0 27 5.5
Edinburgh	+ 55 57 23.2	- 10 50.7	9.998991	- 4 55 28.99	+ 0 12 43.05
Evanston (<i>Dearborn</i>) . .	+ 42 3 33.4	- 11 36.5	9.999342	+ 0 42 30.3	+ 5 50 42.3
Florence (<i>Reale Museo</i>)	+ 43 46 4.1	- 11 39.7	9.999298	- 5 53 13.5	- 0 45 1.5
Florence (<i>Arcetri</i>) . . .	+ 43 45 14.4	- 11 39.7	9.999298	- 5 53 15.15	- 0 45 3.11
Geneva	+ 46 11 58.8	- 11 39.9	9.999236	- 5 32 48.81	- 0 24 36.77
Genoa	+ 44 25 9.3	- 11 40.2	9.999281	- 5 43 53.4	- 0 35 41.4
Georgetown	+ 38 54 25.8	- 11 24.2	9.999422	+ 0 0 6.20	+ 5 8 18.24
Glasgow (<i>Missouri</i>) . . .	+ 39 13 45.6	- 11 25.8	9.999414	+ 1 3 5.93	+ 6 11 17.97
Glasgow (<i>Scotland</i>) . . .	+ 55 52 42.6	- 10 51.5	9.998993	- 4 51 1.4	+ 0 17 10.55
Gohlis	+ 51 21 35.0	- 11 23.7	9.999104	- 5 57 41.69	- 0 49 29.65
Gotha (<i>Old Obs.</i>)	+ 50 56 5.2	- 11 26.0	9.999114	- 5 51 7.20	- 0 42 55.16
Gotha	+ 50 56 37.5	- 11 25.9	9.999114	- 5 51 2.60	- 0 42 50.56
Göttingen	+ 51 31 47.9	- 11 22.8	9.999100	- 5 47 58.4	- 0 39 46.4
Graz	+ 47 4 37.2	- 11 38.8	9.999213	- 6 10 0	- 1 1 48
Greenwich	+ 51 28 38.1	- 11 23.1	9.999101	- 5 8 12.04	0 0 0.00
Grignon	+ 47 33 42	- 11 37.8	9.999201	- 5 25 50	- 0 17 38
Hamburg	+ 53 33 7.0	- 11 10.1	9.999049	- 5 48 5.7	- 0 39 53.8
Hanover	+ 43 42 15.3	- 11 39.6	9.999300	- 0 19 4.13	+ 4 49 7.91
Harrow	+ 51 34 47.4	- 11 22.6	9.999098	- 5 6 52.1	+ 0 1 19.9
Hastings-on-Hudson . . .	+ 40 59 25	- 11 33.2	9.999369	- 0 12 42.4	+ 4 55 29.6
Haverford	+ 40 0 40.1	- 11 29.4	9.999394	- 0 6 59.34	+ 5 1 12.70
Heidelberg	+ 49 24 35	- 11 32.5	9.999153	- 5 43 0.5	- 0 34 48.5
Helsingfors	+ 60 9 42.6	- 10 5.6	9.998893	- 6 48 1.18	- 1 39 49.14
Hereny	+ 47 15 47.4	- 11 38.4	9.999208	- 6 14 36.7	- 1 6 24.7
Hongkong	+ 22 18 12.2	- 8 10.7	9.999789	- 12 44 53.9	- 7 36 41.9
Hudson	+ 41 14 42.6	- 11 34.1	9.999363	+ 0 17 32.12	+ 5 25 44.16
Jamaica	+ 18 24 51	- 6 58.7	9.999854	+ 0 3 17.5	+ 5 11 29.5

POSITIONS OF OBSERVATORIES.

(North Latitudes and West Longitudes are Considered Positive.)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ .	Longitude.	
				From Washington.	From Greenwich.
				h m s	h m s
Jena	+50 55 35.6	-11 26.0	9.999115	- 5 54 32.8	- 0 46 20.8
Kalocsa	+46 31 42	-11 39.6	9.999227	- 6 24 6.3	- 1 15 54.3
Karlsruhe	+49 0 29.6	-11 33.9	9.999163	- 5 41 48.5	- 0 33 36.5
Kasan	+55 47 24.2	-10 52.2	9.998995	- 8 24 41.11	- 3 16 29.07
Kew	+51 28 6	-11 23.2	9.999101	- 5 6 56.9	+ 0 1 15.1
Kiel	+54 20 28.6	-11 4.2	9.999030	- 5 48 47.73	- 0 40 35.69
Kiew	+50 27 11.1	-11 28.2	9.999127	- 7 10 12.75	- 2 2 0.71
Kis Kartal	+47 41 54.8	-11 37.5	9.999197	- 6 26 23.7	- 1 18 11.7
Königsberg	+54 42 50.4	-11 1.3	9.999021	- 6 30 11.15	- 1 21 59.11
Kremsmünster	+48 3 23.8	-11 36.7	9.999188	- 6 4 43.68	- 0 56 31.64
La Plata	-34 54 30.3	+10 56.7	9.999520	- 1 16 35.0	+ 3 51 37.0
Leiden	+52 9 20.0	-11 19.3	9.999084	- 5 26 8.39	- 0 17 56.35
Leipzig	+51 20 6.3	-11 23.9	9.999104	- 5 57 46.06	- 0 49 34.02
Liege (<i>Ougrée</i>)	+50 37 7	-11 27.5	9.999123	- 5 30 27.2	- 0 22 15.2
Lisbon (<i>Marine Obs.</i>)	+38 42 17.6	-11 23.3	9.999427	- 4 31 38.5	+ 0 36 33.5
Lisbon (<i>Royal Obs.</i>)	+38 42 31.3	-11 23.1	9.999427	- 4 31 27.36	+ 0 36 44.68
Liverpool	+53 24 3.8	-11 11.2	9.999053	- 4 55 54.8	+ 0 12 17.2
Lübec	+53 51 31.1	-11 7.9	9.999042	- 5 50 57.7	- 0 42 45.7
Lund	+55 41 52.0	-10 53.0	9.998997	- 6 0 57.06	- 0 52 45.02
Lyons	+45 41 40.8	-11 40.3	9.999248	- 5 27 20.1	- 0 19 8.1
Madison	+43 4 37.0	-11 38.7	9.999316	+ 0 49 25.78	+ 5 57 37.82
Madras	+13 4 8.1	- 5 7.6	9.999925	-10 29 11.39	- 5 20 59.35
Madrid	+40 24 29.7	-11 31.1	9.999384	- 4 53 27.0	+ 0 14 45.0
Manilla	+14 35 25	- 5 40.5	9.999907	-13 12 2	- 8 3 50
Mannheim	+49 29 11.0	-11 32.2	9.999151	- 5 42 2.56	- 0 33 50.52
Marburg	+50 48 46.9	-11 26.5	9.999118	- 5 43 17.0	- 0 35 5.0
Markree	+54 10 31.7	-11 5.5	9.999034	- 4 34 23.6	+ 0 33 48.4
Marseilles	+43 18 19.1	-11 39.1	9.999310	- 5 29 46.68	- 0 21 34.64
Mauritius	-20 5 39	+ 7 30.8	9.999828	- 8 58 24.5	- 3 50 12.5
Melbourne	-37 49 53.4	+11 18.1	9.999449	-14 48 5.8	- 9 39 53.8
Meudon	+48 48 18	-11 34.6	9.999169	- 5 17 7.6	- 0 8 55.6
Mexico	+19 26 1.3	- 7 18.4	9.999838	+ 1 28 12.63	+ 6 36 26.67
Middletown ^r (<i>Conn.</i>)	+41 33 16.0	-11 35.1	9.999355	- 0 17 34.86	+ 4 50 37.18
Milan	+45 27 59.4	-11 40.4	9.999254	- 5 44 58.01	- 0 36 45.97
Modena	+44 38 52.8	-11 40.4	9.999275	- 5 51 54.9	- 0 43 42.9
Moncalisri	+44 59 51	-11 40.4	9.999266	- 5 39 1	- 0 30 49
Montreal	+45 30 17.0	-11 40.4	9.999253	- 0 13 53.50	+ 4 54 18.54
Montsouris	+48 49 18.0	-11 34.5	9.999168	- 5 17 32.72	- 0 9 20.68
Moscow	+55 45 19.8	-10 52.5	9.998995	- 7 38 29.21	- 2 30 17.17
Mount Hamilton	+37 20 24.6	-11 14.9	9.999461	+ 2 58 22.77	+ 8 6 34.81
Munich	+48 8 45.5	-11 36.5	9.999186	- 5 54 38.17	- 0 46 26.13
Naples	+40 51 45.4	-11 32.8	9.999372	- 6 5 12.9	- 0 57 0.9
Nashville	+36 8 54.4	-11 6.6	9.999490	+ 0 39 0.2	+ 5 47 12.2
Natal	-29 50 47.4	+10 3.7	9.999637	- 7 12 13.22	- 2 4 1.18
Neuchatel	+47 0 1.2	-11 38.9	9.999215	- 5 36 1.90	- 0 27 49.86

POSITIONS OF OBSERVATORIES.

(North Latitudes and West Longitudes are Considered Positive.)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ .	Longitude.	
				From Washington.	From Greenwich.
	° ' "	° ' "		h m s	h m s
New Haven (<i>Old Obs'y</i>)	+41 18 36.5	- 11 34.3	9.999361	- 0 16 29.90	+ 4 51 42.14
New Haven (<i>Yale Univ.</i>)	+41 19 22.3	- 11 34.4	9.999361	- 0 16 31.48	+ 4 51 40.56
New York (<i>Columb. Coll.</i>)	+40 45 23.1	- 11 32.4	9.999375	- 0 12 18.40	+ 4 55 53.64
New York (<i>RUTHERFORD</i>)	+40 43 48.5	- 11 32.3	9.999376	- 0 12 15	+ 4 55 57
Nice	+43 43 16.9	- 11 39.6	9.999299	- 5 37 24.3	- 0 29 12.3
Nicolaëff	+46 58 20.6	- 11 38.9	9.999216	- 7 16 5.91	- 2 7 53.87
Northfield	+44 27 41.6	- 11 40.3	9.999280	+ 1 4 23.77	+ 6 12 35.81
Oakland (<i>Cal.</i>) . .	+37 48 5	- 11 17.9	9.999449	+ 3 0 54.58	+ 8 9 6.62
Odessa	+46 28 36.2	- 11 39.6	9.999228	- 7 11 14.4	- 2 3 2.4
Ogden	+41 13 8.6	- 11 34.0	9.999363	+ 2 19 47.52	+ 7 27 59.56
O-Gyalla	+47 52 27.3	- 11 37.1	9.999192	- 6 20 57.64	- 1 12 45.60
Olmütz	+49 35 43	- 11 31.8	9.999149	- 6 17 20	- 1 9 8
Oxford (<i>Mississippi</i>)	+34 22 12.6	- 10 52.0	9.999533	+ 0 49 55.1	+ 5 58 7.1
Oxford (<i>Radcliffe</i>)	+51 45 36.0	- 11 21.6	9.999094	- 5 3 9.4	+ 0 5 2.6
Oxford (<i>University</i>)	+51 45 34.2	- 11 21.6	9.999094	- 5 3 11.6	+ 0 5 0.4
Padua	+45 24 2.5	- 11 40.4	9.999256	- 5 55 41.24	- 0 47 29.20
Palermo	+38 6 44.0	- 11 19.7	9.999442	- 6 1 36.7	- 0 53 24.7
Paramatta	-33 48 49.8	+ 10 46.9	9.999546	-15 12 12.2	-10 4 0.2
Paris	+48 50 11.2	- 11 34.5	9.999168	- 5 17 33.07	- 0 9 21.03
Philadelphia . . .	+39 57 7.5	- 11 29.2	9.999396	- 0 7 33.58	+ 5 0 38.46
Plonsk	+52 37 40.0	- 11 16.4	9.999072	- 6 29 44.0	- 1 21 32.0
Pola	+44 51 49.0	- 11 40.4	9.999270	- 6 3 35.06	- 0 55 23.02
Portsmouth	+50 48 3	- 11 26.6	9.999118	- 5 3 47.2	+ 0 4 24.8
Potsdam	+52 22 56.0	- 11 17.9	9.999078	- 6 0 27.9	- 0 52 15.9
Poughkeepsie . .	+41 41 18	- 11 35.5	9.999351	- 0 12 38.4	+ 4 55 33.6
Prague	+50 5 18.5	- 11 29.8	9.999136	- 6 5 53.5	- 0 57 41.5
Princeton	+40 20 57.8	- 11 30.8	9.999385	- 0 9 34.54	+ 4 58 37.50
Princeton (<i>Halsted</i>)	+40 20 55.8	- 11 30.9	9.999386	- 0 9 32.60	+ 4 58 39.44
Providence (<i>SEAGRAVE</i>)	+41 49 46	- 11 35.9	9.999348	- 0 22 34.52	+ 4 45 37.52
Providence (<i>Ladd</i>)	+41 50 21	- 11 35.9	9.999348	- 0 22 36.09	+ 4 45 35.95
Pulkowa	+59 46 18.7	- 10 10.4	9.998902	- 7 9 30.71	- 2 1 18.67
Quebec	+46 47 59.2	- 11 39.2	9.999220	- 0 23 19.40	+ 4 44 52.64
Quito	- 0 14 0	+ 0 5.7	0.000000	+ 0 7 8	+ 5 15 20
Riga	+56 57 7	- 10 41.3	9.998967	- 6 44 40	- 1 36 28
Rio de Janeiro . .	-22 54 23.7	+ 8 21.1	9.999779	- 2 15 30.6	+ 2 52 41.4
Rochester	+43 9 16.8	- 11 38.8	9.999314	+ 0 2 9.74	+ 5 10 21.78
Rome (<i>Coll. Rom.</i>)	+41 53 53.6	- 11 36.1	9.999346	- 5 58 7.59	- 0 49 55.55
Rome (<i>Capitol</i>) . .	+41 53 33.5	- 11 36.0	9.999346	- 5 58 8.56	- 0 49 56.52
Rome (<i>Vatican</i>) . .	+41 54 17	- 11 36.1	9.999346	- 5 58 1.4	- 0 49 49.4
Rousdon	+50 42 38	- 11 27.0	9.999120	- 4 56 13.1	+ 0 11 58.9
Rugby	+52 22 5	- 11 18.0	9.999079	- 5 3 10.1	+ 0 5 1.9
San Fernando . . .	+36 27 41.5	- 11 8.9	9.999483	- 4 43 22.4	+ 0 24 49.6
San Francisco . . .	+37 47 27.7	- 11 17.8	9.999450	+ 3 1 30.66	+ 8 9 42.70
Santiago de Chile .	-33 26 42.0	+ 10 43.4	9.999555	- 0 25 25.7	+ 4 42 46.3
Schwerin	+53 37 37.9	- 11 9.6	9.999047	- 5 53 52.9	- 0 45 40.9

POSITIONS OF OBSERVATORIES.

(North Latitudes and West Longitudes are Considered Positive.)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ .	Longitude.	
				From Washington.	From Greenwich.
	° ' "	° ' "		h m s	h m s
South Hadley . . .	+ 42 15 18.2	- 11 37.0	9.999337	- 0 17 51.75	+ 4 50 20.29
Speier	+ 49 18 55.2	- 11 32.9	9.999156	- 5 41 57.66	- 0 33 45.62
St. Louis	+ 38 38 3.6	- 11 22.7	9.999429	+ 0 52 37.07	+ 6 0 49.11
St. Petersburg . . .	+ 59 56 29.7	- 10 8.4	9.998898	- 7 9 25.50	- 2 1 13.46
St. Petersburg (<i>Univ.</i>)	+ 59 56 32.0	- 10 8.4	9.998898	- 7 9 23.45	- 2 1 11.41
Stockholm	+ 59 20 34.0	- 10 15.5	9.998912	- 6 20 26.02	- 1 12 13.98
Stonyhurst	+ 53 50 40	- 11 8.0	9.999042	- 4 58 19.36	+ 0 9 52.68
Strassburg (<i>New Obs.</i>)	+ 48 35 0.8	- 11 35.3	9.999174	- 5 39 16.69	- 0 31 4.65
Strassburg (<i>Old Obs.</i>)	+ 48 34 53.8	- 11 35.3	9.999174	- 5 39 14.53	- 0 31 2.49
Sydney	- 33 51 41.1	+ 10 47.3	9.999545	- 15 13 0.9	- 10 4 48.9
Syracuse	+ 43 2 13.1	- 11 38.6	9.999317	- 0 3 38.68	+ 5 4 33.36
Tacubaya	+ 19 24 17.5	- 7 17.8	9.999839	+ 1 28 34.45	+ 6 36 46.49
Taschkent	+ 41 19 32.2	- 11 34.4	9.999361	- 9 45 22.84	- 4 37 10.80
Tokio	+ 35 39 17.5	- 11 2.8	9.999502	- 14 27 10.0	- 9 18 58.0
Toronto	+ 43 39 35.9	- 11 39.6	9.999301	+ 0 9 22.61	+ 5 17 34.65
Toulouse	+ 43 36 45.3	- 11 39.5	9.999302	- 5 14 3.1	- 0 5 51.1
Trieste	+ 45 38 45.4	- 11 40.3	9.999250	- 6 3 15.05	- 0 55 3.01
Troy (<i>N. Y.</i>)	+ 42 43 52.9	- 11 38.1	9.999325	- 0 13 29.75	+ 4 54 42.29
Tulse Hill	+ 51 26 47.0	- 11 23.3	9.999102	- 5 7 44.3	+ 0 0 27.7
Turin	+ 45 4 8.4	- 11 40.4	9.999265	- 5 38 59.27	- 0 30 47.23
Twickenham	+ 51 27 4.2	- 11 23.3	9.999102	- 5 6 58.9	+ 0 1 13.1
Upsala (<i>New Obs.</i>) . .	+ 59 51 29.4	- 10 9.3	9.998900	- 6 18 42.27	- 1 10 30.23
Utrecht	+ 52 5 9.5	- 11 19.7	9.999086	- 5 28 43.7	- 0 20 31.7
Venice	+ 45 25 49.5	- 11 40.4	9.999253	- 5 57 37.8	- 0 49 25.8
Vienna (<i>Josephstadt</i>) .	+ 48 12 53.8	- 11 36.2	9.999183	- 6 13 37.3	- 1 5 25.3
Vienna (<i>New Obs.</i>) . .	+ 48 13 55.4	- 11 36.2	9.999183	- 6 13 33.53	- 1 5 21.49
Vienna (<i>Old Obs.</i>) . .	+ 48 12 35.5	- 11 36.3	9.999184	- 6 13 43.74	- 1 5 31.76
Vienna (<i>Ottakring</i>) . .	+ 48 12 47.2	- 11 36.2	9.999183	- 6 13 23.15	- 1 5 11.11
Warsaw	+ 52 13 5.7	- 11 18.9	9.999082	- 6 32 19.4	- 1 24 7.4
Washington	+ 38 53 38.8	- 11 24.1	9.999422	0 0 0	+ 5 8 12.04
Washington (<i>New Obs.</i>)	+ 38 55 14.7	- 11 24.2	9.999422	+ 0 0 3.67	+ 5 8 15.71
Washington (<i>Smithsonian</i>)	+ 38 53 17.3	- 11 24.1	9.999422	- 0 0 5.8	+ 5 8 6.2
Wellington	- 41 18 0.6	+ 11 34.3	9.999361	- 16 47 17.9	- 11 39 5.9
West Point (<i>Old Obs.</i>)	+ 41 23 31	- 11 34.6	9.999359	- 0 12 22.71	+ 4 55 49.33
West Point (<i>New Obs.</i>)	+ 41 23 22.1	- 11 34.6	9.999359	- 0 12 21.49	+ 4 55 50.55
Wilhelmshaven	+ 53 31 52.0	- 11 10.3	9.999050	- 5 40 47.25	- 0 32 35.21
Williamstown (<i>Mass.</i>) .	+ 42 42 30	- 11 38.0	9.999325	- 0 15 22	+ 4 52 50
Williamstown (<i>Victoria</i>)	- 37 52 7.2	+ 11 18.3	9.999448	- 14 47 50.8	- 9 39 38.8
Wilna	+ 54 40 59.1	- 11 1.6	9.999021	- 6 49 21.0	- 1 41 9.0
Windsor	- 33 36 30.8	+ 10 44.9	9.999551	- 15 11 32.55	- 10 3 20.51
Zürich	+ 47 22 40.0	- 11 38.2	9.999205	- 5 42 24.4	- 0 34 12.4

ON THE ARRANGEMENT AND USE OF THE AMERICAN EPHEMERIS AND NAUTICAL ALMANAC.

PART I—THE EPHEMERIS FOR THE MERIDIAN OF GREENWICH.

The greater portion of this Ephemeris, embracing the positions of the sun and moon; the distances of the moon from the centres of the sun and of the four most conspicuous planets, and from certain fixed stars; the ephemerides of the planets Mercury, Venus, Mars, Jupiter, and Saturn, is designed for the special use of navigators. The remainder contains the ephemerides of Uranus and Neptune, the heliocentric co-ordinates of the seven major planets, the rectangular equatorial co-ordinates of the sun, the moon's longitude and latitude, data for the libration of the moon, the obliquity of the ecliptic, the equation of the equinoxes, etc.

TIME.

Astronomers make use of two different kinds of time; (1) mean solar time, which is to be distinguished from true, or apparent solar time; and sidereal time.

Solar Time.—Solar time is that used for all the purposes of ordinary life, and is measured by the daily motion of the sun. A *Solar Day* is the interval of time between two successive transits of the sun over the same meridian; and the hour-angle of the sun is called *Solar Time*. This is the most natural and direct measure of time. But the intervals between the successive returns of the sun to the same meridian are not exactly equal, owing to the varying motion of the earth around the sun, and to the obliquity of the ecliptic. The intervals between the sun's transits over the meridian being unequal it is impossible to regulate a clock or chronometer so that it shall accurately follow the sun.

To avoid the irregularity which would arise from using the true sun as the measure of time, a fictitious sun, called the *Mean Sun*, is supposed to move in the equator with a uniform velocity. This mean sun is supposed to keep, on the average, as near the real sun as is consistent with perfect uniformity of motion; it is sometimes in advance of it, and sometimes behind it, the greatest deviation being about 16 minutes of time.

Mean Solar Time, which is perfectly equable in its increase, is measured by the motion of this mean sun. The clocks in ordinary use and the chronometers used by navigators are regulated to mean solar time.

True, or Apparent Solar Time is measured by the motion of the real sun.

The difference between apparent and mean time is called the *Equation of Time*. By means of it, we change apparent to mean time, or the reverse. Thus, if the apparent time be given, the mean time corresponding to it will be obtained by adding or subtracting the equation of time, according to the precept at the head of the column in which it is found, on page I of the Calendar for each month. If the mean time be given, the apparent time is obtained by applying the equation of time as directed by the precept on page II of the Calendar.

Sidereal Time.—Sidereal time is measured by the daily motion of the stars; or, as it is used by astronomers, by the daily motion of that point in the equator from which the true right ascension of the stars is counted. This point is the vernal equinox, and its hour-angle is called *Sidereal Time*. Astronomical clocks, regulated to sidereal time, are called sidereal clocks.

A *Sidereal Day* is the interval of time between the transit of the vernal equinox over the meridian, and its next succeeding return to the same meridian. It is about $3^m\ 56^s$ shorter than the mean solar day; $365\frac{1}{4}$ solar days, or a year, being divided into $366\frac{1}{4}$ sidereal days.

It is divided into 24 hours. The sidereal hours are counted from 0 to 24, commencing with the instant of the passage of the true vernal equinox over the upper meridian, and ending with its return to the same meridian. About March 21st of each year the sidereal clock agrees with the mean time, or ordinary clock, and the former gains on the latter about $3^m 56^s$ per day, so that at the end of a year it will have gained an entire day, and will again agree with the mean time clock.

Day.—The *Civil Day*, according to the customs of society, commences at midnight, and comprises twenty-four hours, from one midnight to the next following. The hours are counted from 0 to 12 from midnight to noon, after which they are again reckoned from 0 to 12 from noon to midnight. Thus the day is divided into two periods of 12 hours each, of which the first is marked A. M., and the last is marked P. M.

The *Astronomical Day* begins at noon on the civil day of the same date. It also comprises twenty-four hours, but they are reckoned from 0 to 24, and from the noon of one day to that of the next following. The astronomical as well as the civil time may be either apparent or mean, according as it is reckoned from apparent noon or from mean noon.

The civil day begins twelve hours before the astronomical day; therefore the first period of the civil day answers to the last part of the preceding astronomical day, and the last period of the civil day corresponds to the first part of the same astronomical day. Thus, January 9th, 2 o'clock, A. M., civil time, is January 8th, 14^h, astronomical time; and January 9th, 2 o'clock, P. M., civil time, is also January 9th, 2^h, astronomical time. The rule, then, for the transformation of civil time into astronomical time is this: *If the civil time is marked A. M., take one from the day and add twelve to the hours, and the result is the astronomical time wanted; if the civil time is marked P. M., take away the designation P. M., and the astronomical time is had without further change.*

To change astronomical to civil time, we simply write P. M. after it, if it is less than 12 hours. If greater than 12 hours, we subtract 12 hours from it, add 1 to the days, and write A. M. For example, January 3d, 23 hours, astronomical time, is January 4th, 11 o'clock, A. M., civil time.

If the longitude from Greenwich be expressed in time, and, when *west*, added to the local time, or, when *east*, subtracted from the local time, the result is the corresponding Greenwich time. If the local mean time is used, the result is the Greenwich mean time, which ordinarily is that required for the use of this Ephemeris. The rule is the same, whether we use mean or sidereal time.

THE CALENDAR.

The Calendar is divided into twelve months, and to each month are assigned eighteen pages, the contents of which are as follow:—

Page I contains, for Greenwich apparent noon of each day, *The Sun's Apparent Right Ascension and Declination*, and the *Equation of Time*. Adjoining columns contain the differences of these quantities for one hour. By multiplying this difference by the hours and parts of an hour from Greenwich apparent noon, and adding the amount to, or subtracting it from, the quantity at noon, according as that quantity is increasing or decreasing, we obtain the value of any quantity for any given Greenwich apparent time. The hourly differences are given for the instant of apparent noon at Greenwich, and, when greater accuracy, is required, should be first interpolated for half the hours and parts of an hour of the Greenwich apparent time.

This page is chiefly used when the sun is observed on the meridian, and the local apparent time is $0^h 0^m 0^s$. The longitude from Greenwich expressed in time, if west, is at that instant the Greenwich apparent time, or time after Greenwich apparent noon; if east, it is time before Greenwich apparent noon. The longitude of any place is therefore employed in reducing the quantities on this page to apparent noon at the place.

The right ascension of the sun thus reduced is the sidereal time of local apparent noon. The difference between it and the clock time of the meridian passage of the sun is the error of the clock on sidereal time.

The declination of the sun reduced to the meridian, or apparent noon, of the place, is required in finding the latitude from a meridian altitude of the sun.

As an example of the use of page I:—

Let the sun's declination be required at apparent noon, 1897, May 27, at a place whose longitude is $179^{\circ} 40'$, or $11^{\text{h}} 58^{\text{m}} 40^{\text{s}}$ east from Greenwich:

Local apparent time	May 27,	<div style="text-align: right;">h m s 0 0 0</div>
Longitude from Greenwich (subtractive)		<div style="text-align: right;">11 58 40</div>
Greenwich apparent time	May 26,	<div style="text-align: right;">12 1 20</div>

Reducing the minutes and seconds to decimals of an hour, we find that this moment is $12^{\text{h}}.022$ after Greenwich apparent noon on May 26, or $11^{\text{h}}.978$ before Greenwich apparent noon on May 27.

On page 74 of the Ephemeris we find that the change of declination in one hour is

May 26, at Greenwich apparent noon	<div style="text-align: right;">+ 25.55</div>
May 27, at Greenwich apparent noon	<div style="text-align: right;">+ 24.63</div>
Difference for one day	<div style="text-align: right;">0.92</div>

If we want to be very exact, we find the amount of this hourly difference for the time which is half way between Greenwich noon and the time of observation; that is, for 6 hours after Greenwich noon of the 26th, this being half of 12 hours. Six hours is 0.25 of a day; so the calculation is as follows:—

Difference for one hour, May 26	<div style="text-align: right;">25.55</div>
Change for 0.25 of a day or $0''.92 \times 0.25$	<div style="text-align: right;">— 0.23</div>
Difference at 6 hours after noon	<div style="text-align: right;">25.32</div>
$25''.32 \times 12.022 = 304''.4 = 5' 4''.4$	
Declination at Greenwich noon, May 26	<div style="text-align: right;">N. 21 13 24.0</div>
Change in 12.022 hours (additive)	<div style="text-align: right;">5 4.4</div>
Sun's declination at time of observation	<div style="text-align: right;">N. 21 18 28.4</div>

When the time of observation is only a few hours before Greenwich noon, it may be better to count the longitude backward from this nearest noon. Thus, in the example just given, the time is $11^{\text{h}}.978$ before Greenwich noon of May 27; half this interval is about 0.25 of a day, and the hourly motion for the middle of the interval is $24''.86$. Then, we find:—

Declination at Greenwich noon, May 27	<div style="text-align: right;">N. 21 23 26.2</div>
Product of $24''.86 \times 11.978 = 297''.8$ (subtractive)	<div style="text-align: right;">4 57.8</div>
Sun's declination at time of observation	<div style="text-align: right;">N. 21 18 28.4</div>

It will always be well to make the calculation by both methods, as their agreement will show both to be right.

At sea it is ordinarily sufficient to have the declination to the nearest half minute, and the reduction may be found by Table 12 of BOWDITCH'S *American Practical Navigator*.

The equation of time, as has been before explained, is the number of minutes and seconds to be added to or subtracted from the apparent time, or the time given by an observation of the sun, to obtain the mean time. The heading of the column directs the manner in which the equation is to be applied. When there is a change in the course of the month from addition to subtraction or the reverse (as in the months of April and June), the two different directions are separated by a line, while a corresponding line below points out the dates between which the change takes place. The equation of time, as given on page I, is the mean time of apparent noon, or the hour-angle of the mean sun at that instant.

The Sun's Semidiameter and the *Sidereal Time of Semidiameter Passing Meridian* are also given on page I. The sun's semidiameter is used in reducing the altitude of the upper or lower limb of the sun to the altitude of the center; and in reducing the angular distance of the limb from the moon or some other object, to the distance from the center of the sun. The sidereal time of semidiameter passing the meridian is employed in obtaining the passage of the sun's center over the wires of a transit-instrument, when the passage of one limb only has been observed. The quantity found in this column is to be added to the time of transit of the first, or western, limb; and to be subtracted from the time of transit of the second, or eastern, limb.

Page II contains, for Greenwich mean noon of each day, *The Sun's Apparent Right Ascension* and *Declination*, the *Equation of Time*, and the *Sidereal Time of Mean Noon*. The hourly changes of these quantities are also given, and may be used in reducing them to any Greenwich mean time. The hourly changes may be first interpolated for half the Greenwich time, when great precision is required, in the way described in explaining the calculation of the declination.

The right ascension and declination on pages I and II are affected by aberration, and therefore denote the *apparent* position of the *true* sun. Page II is more conveniently used when the mean time is known. This is the case in most observations of the sun out of the meridian, when the times have been noted by a clock or chronometer regulated to mean time. The quantities on this page can be reduced to mean noon of any place by interpolating for the longitude, as in the example of the sun's declination on the preceding page.

The sun's declination is required in finding the latitude of the place, the local time, and the sun's azimuth and amplitude, from observations of the sun.

The equation of time is needed in finding the mean time from observations of the sun, and the latitude from observations out of the meridian. The heading of the column directs the manner in which it is to be applied to mean time to obtain the apparent time.

The equation of time, as given on page II, is the apparent time of mean noon; and is equivalent to the hour-angle of the true sun at the instant of mean noon.

The sidereal time of mean noon is also the right ascension of the mean sun at Greenwich mean noon. It may be reduced for the longitude, or to any Greenwich mean time, by using the hourly difference, $9^{\text{s}}.8565$; or by Table III, appended to this volume, for reducing intervals of mean solar to sidereal time. Table 9 of BOWDITCH's *Navigator* may be used for the same purpose.

The sun's right ascension and the sidereal time of mean noon, or right ascension of the mean sun, are useful in converting mean time to sidereal time. We first find the Greenwich mean time, then the R. A. of the mean sun for this time, as last explained; this being added to the local mean time will give the sidereal time.

The sidereal time of mean noon, reduced for the longitude of the place, is also used in converting sidereal time to mean time. Subtracting the reduced value from the given sidereal time, gives the interval of sidereal time from noon. Subtracting from this the corresponding reduction of a sidereal interval to a mean time interval, in Table II, appended to this volume, or Table 8 of BOWDITCH's *Navigator*, will give the mean time required. This reduction may also be found by multiplying $9^{\text{s}}.8296$ by the hours and parts of an hour of the given sidereal time.

As examples of the use of page II:—

1.—Let the sun's right ascension and the equation of time be required for 1897, May 15, $9^{\text{h}} 2^{\text{m}} 30^{\text{s}}$, A. M., mean time, at a place whose longitude is $100^{\circ} 10'$, or $6^{\text{h}} 40^{\text{m}} 40^{\text{s}}$, west of Greenwich.

Local astronomical mean time	.	.	May 14,	^h ^m ^s 21 2 30
Longitude from Greenwich (additive)	.	.	.	6 40 40
Greenwich mean time	.	.	May 15,	3 43 10 = $3^{\text{h}}.7194$

Sun's Right Ascension.

	h	m	s
May 15, Greenwich noon	3	30	2.99
H. D. $9^{\circ}.883 \times 3.7194$	+	0	36.76
	3	30	39.75

Equation of Time.

	m	s
May 15, noon	3	50.41 (additive)
H. D. $-0^{\circ}.026 \times 3.72$	-	0.10
	3	50.31

In this case, the hourly differences interpolated to half the interval, or $1^{\text{h}}.9$ after noon, have been used.

The equation of time in this example is additive to mean time. Its reduction could also have been found by Table 12 of BOWDITCH'S *Navigator*.

2.—If the sidereal time is required for the same date and time, we have:—

	h	m	s
May 15, Sidereal Time (at Greenwich mean noon)	3	33	53.40
Hourly difference $9^{\circ}.8565 \times 3.7194$	+	0	36.66
Add the local astronomical mean time	21	2	30.00
The required sidereal time is (rejecting 24^{h})	0	37	0.06

The reduction $0^{\text{m}} 36.66$ could have been found in Table III corresponding to the Greenwich mean time $3^{\text{h}} 43^{\text{m}} 10^{\text{s}}$ or by Table 9 of BOWDITCH'S *Navigator*.

3.—On 1897, May 15, A. M., at a place whose longitude is $100^{\circ} 10' \text{ W.}$, suppose the sidereal time to be $0^{\text{h}} 37^{\text{m}} 0^{\text{s}}.06$, and that the corresponding mean time is required.

The astronomical day is May 14; the longitude in time, $+ 6^{\text{h}} 40^{\text{m}} 40^{\text{s}}$, or $+ 6^{\text{h}}.678$.

	h	m	s
May 14, Sidereal Time (at Greenwich mean noon)	3	29	56.84
The H. D. $9^{\circ}.8565 \times 6.678$, or the reduction for $6^{\text{h}} 40^{\text{m}} 40^{\text{s}}$ in Table III	+	1	5.82
The sidereal time of local mean noon	3	31	2.66
The given sidereal time ($+ 24^{\text{h}}$, if necessary for the following subtraction)	24	37	0.06
Subtracting the first from the second gives the sidereal interval from noon	21	5	57.40 = $21^{\text{h}}.0993$
— $9^{\circ}.8296 \times 21.0993$ or the reduction for $21^{\text{h}} 5^{\text{m}} 57^{\text{s}}.4$ in Table II	-	3	27.40
The required astronomical mean time is	May 14,	21	2 30.00

Page III contains, for Greenwich mean noon of each day, *The Sun's True Longitude* and *Latitude*, and the *Logarithm of the Radius Vector of the Earth*. The longitudes of the sun are the true geometric longitudes, not corrected for aberration. The longitude is given in two columns, headed λ and λ' ; λ representing the sun's longitude counted from the true equinox of the date; and λ' , the same co-ordinate counted from the mean equinox of the beginning of the year, (January $0^{\text{d}}.0$). A column of hourly differences enables the computer to obtain the sun's longitude for any hour from noon. The hourly differences of the logarithm of the radius vector are likewise given. The latitude is referred to the ecliptic of the date.

The last column on page III contains the *Mean Time of Sidereal Noon*; that is, the number of hours, minutes and seconds after Greenwich mean noon when the first point of Aries passes the meridian of Greenwich. It may be reduced to any meridian by interpolating for the longitude, or to any Greenwich sidereal time by means of the hourly difference, $-9^{\circ}.8296$. The reduction, however, can be taken directly from Table II for reducing intervals of sidereal time to mean solar time; or from Table 8 of BOWDITCH'S *Navigator*.

This column may be used in converting sidereal time to mean time instead of that on page II. As an illustration, let us take Example 3, above.

It is seen in advance that the sum of the mean time of sidereal noon and the given sidereal time is less than 24 hours. Were it more than 24 hours, the mean time of sidereal noon should be taken out for May 13, that is the preceding astronomical day.

	h	m	s
May 14, the mean time of Greenwich sidereal noon is	20	26	41.64
The H. D. $-9^{\circ}.8296 \times 6.678$, or the reduction for longitude, Table II	-	1	5.64
The mean time of local sidereal noon	20	25	36.00
Add the given sidereal time	0	37	0.06 = $0^{\text{h}}.6167$
The sum is	21	2	36.06
— $9^{\circ}.8296 \times 0.6167$, or the reduction for $0^{\text{h}} 37^{\text{m}} 0^{\text{s}}.06$ in Table II	-	0	6.06
The required astronomical mean time	May 14,	21	2 30.00

Page IV contains *The Moon's Semidiameter and Equatorial Horizontal Parallax*, for each mean noon and midnight at Greenwich. Columns adjoining those of the horizontal parallax give the change of this quantity in one hour, by means of which it can be reduced to any other Greenwich mean time, in the same way as the sun's declination and the equation of time in the preceding examples. The sign plus or minus prefixed to the hourly differences, shows whether the horizontal parallax is increasing or decreasing.

The corresponding reduction of the moon's semidiameter may be readily found by multiplying the reduction of the horizontal parallax by 0.272, or by simply computing the proportional part.

If, for example, the semidiameter of the moon is to be taken out for 1897, January 4, 10^h, P. M., Greenwich mean time, we see that the difference of the semidiameters at noon and midnight of January 4 is 6".1; then,

$$12^h : 10^h = 6''.1 : 5''.1,$$

which is the correction to be subtracted from the semidiameter at noon, because the semidiameter is decreasing. The moon's semidiameter then, for January 4, 10^h, is 15' 45".4.

The moon's semidiameter and horizontal parallax are required in reducing observations of the moon. When great precision is needed, the hourly differences should be first interpolated for half the interval of Greenwich time from noon or midnight, and a correction applied to the horizontal parallax for the latitude of the place of observation.

The *Mean Time of the Moon's Upper Transit at Greenwich*, which is given on page IV to tenths of a minute, is also accompanied with a column of differences for one hour of longitude, by means of which, having the longitude converted into time, the local time of the moon's meridian passage over any other place may be computed. The reduction may be taken by simple inspection from BOWDITCH'S Table 11. The last column of this page contains the *Age of the moon*, or the time elapsed since the preceding new moon, to tenths of a day.

Pages V—XII contain *The Moon's Right Ascension and Declination*, for each day and hour of Greenwich mean time. They are accompanied with columns of differences for one minute, which are also given at each hour. The Greenwich mean time, which is required for taking out these quantities, may be taken from a well-regulated chronometer, or obtained by applying the longitude converted into time, to the local mean time of the observer. The right ascension or declination is taken out for the day and hour of the Greenwich mean time; the *Diff. for 1 Minute* multiplied by the minutes and parts of a minute of the Greenwich time, and the product added to, or subtracted from the quantity, according as the quantity is increasing or decreasing.

Thus, suppose the moon's right ascension and declination are required for 1897, August 3, 10^h 10^m 30^s, astronomical mean time at Greenwich:—

<i>Right Ascension.</i>			<i>Declination.</i>		
	<i>h</i>	<i>m</i>	<i>s</i>		
August 3, 10 ^h	12	56	24.80	S. 11	27 31.3
Diff. 2 ^d .1576 × 10.5	=		+ 22.65	14".434 × 10.5	= - 2 31.6
August 3, 10 ^h 10 ^m 30 ^s	12	56	47.45	S. 11	30 2.9

The differences interpolated for 5^m.2 = 0^h.09 are, for the right ascension 2^d.1576, and for the declination 14".434, which have been used for greater precision.

Page XII contains also the *Phases of the Moon* and the dates of the *Moon's Perigee and Apogee*, or least and greatest distances from the earth.

Pages XIII—XVIII contain the *Lunar Distances*, or the angular distances of the centre of the moon from the centre of the sun, and from the four larger planets and certain fixed stars, as they would appear to an observer at the centre of the earth. They are given for every third hour of Greenwich mean time, beginning at noon; the dates are therefore astronomical. All the distances that can be observed on the same day, are grouped together under that date; and the columns are read from left to right, across both pages of the same opening. The letter W. or E. is affixed to the name of the sun, planet or star, to indicate that it is on the west, or east side of the moon.

An observer on the earth's surface having measured a lunar distance, corrected it for errors of his instrument and for the semidiameter of the objects, and cleared it from the effects of refraction and parallax, finds the true or geocentric distance, that is, the distance as it would have appeared from the centre of the earth at the moment of observation. With this distance and the distances in the Ephemeris of the same bodies on the same day, the Greenwich mean time of the observation can be found.

To lessen the labor of computation, there is given in the Ephemeris, between every two successive distances, the logarithm of the seconds of time in which the distance changes 1"; or, as it is usually called, the *Proportional Logarithm of the Difference*. It is given for the middle instant of the two hours between which it is placed.

For computing the Greenwich time we have the following rule:—

Find in the Almanac the two distances between which the true distance falls; take out the nearer of these, the hours of Greenwich time over it, and the P. L. of Diff. between them.

Find the difference between the true distance and the distance taken from the Almanac; and from the proportional logarithm of this difference, as found in the Navigator (Table 45), subtract the P. L. of Diff. taken from the Almanac.

The result is the proportional logarithm of an interval of time to be added to the hours of Greenwich time, taken from the Almanac, when the earlier Almanac-distance is used; to be subtracted from the hours of Greenwich time, when the later Almanac-distance is used.

Another method is, to add the common logarithm of the difference of the true and the Almanac-distances to the P. L. of Diff. of the Almanac; the sum will be the common logarithm of the correction to be applied to the hours of Greenwich time. Table 34 of BOWDITCH'S *Navigator* saves the operation of reducing degrees (or hours) and minutes to seconds, and the reverse.

As the P. L. of Diff. in the Ephemeris varies, the Greenwich time found by the methods just described may not be sufficiently exact. To correct it for such variation, or second difference, take the difference between the P. L. of Diff. used and the one which follows it in the Ephemeris, (or, more strictly, half the difference of the preceding and following ones). With this difference, and the first correction of the Greenwich time already found, enter Table I, appended to this volume, and take out the corresponding seconds, which are to be added to the approximate Greenwich time when the Prop. Logs. in the Ephemeris are decreasing; and subtracted when they are increasing.

Thus the Greenwich mean time of the observation can be obtained. If the observer has noted the time of observation by a chronometer, the difference of this chronometer-time and the Greenwich mean time will be the error of the chronometer on Greenwich time as found from the lunar distance. In this way lunar distances can be used as a check upon the chronometer. By a series of carefully observed lunar distances on both sides of the moon, the chronometer-error may generally be ascertained within 20 or 30 seconds.

If the observer has found the local mean time of observation from the observed altitude of one of the bodies, or by a watch regulated to that time by recent observations and corrected for change of longitude in the interval, the difference of this local time and the Greenwich time found from the lunar distance will be his longitude. A longitude derived by this method should always be considered as uncertain by 5' or more.

As an example of finding the Greenwich mean time from a lunar distance, suppose that in 1897, January 8, the corrected distance of the moon's centre from that of α Arietis is $42^{\circ} 30' 30''$:—

Corrected distance	.	.	.	.	42 30 30	
Distance in Ephemeris Jan. 8, III ^h	.	.	.	.	42 51 59	P. L. 0.2965
Difference	.	.	.	.	0 21 29	P. L. 0.9232
					h m s	P. L. 0.6267
Time from III ^h (after)	.	.	.	.	+ 0 42 31	
Corr. for 2d Diff., Table I	.	.	.	.	— 3	
Greenwich mean time Jan. 8	.	.	.	.	3 42 28	

By a table of common logarithms, or a table of logarithms of small arcs, the reduction of the Greenwich time would be found thus:—

From Ephemeris	P. L.	0.2965
Diff. of distances, $21' 29'' = 1289''$	log	<u>3.1103</u>
Red. of Greenwich time, $2551^s = 42^m 31^s$	log	3.4068

The result is the same as by the previous method.

Pages 218—249 contain the geocentric ephemerides of the seven major planets. The positions are referred to the equator and true equinox of the date, and corrected for aberration; they are, therefore, apparent positions. All the data except meridian passage are given for the moment of Greenwich mean noon. The column *Meridian Passage* gives the hour, minute and tenth of that passage of the planet over the meridian of Greenwich which occurs next after the noon of the date.

The right ascension and declination of a planet are required whenever it has been observed for time, latitude or azimuth. The mode of reducing them to any instant of Greenwich mean time is the same as in the examples for the sun, previously given. The local mean time of passage across any other meridian can be found by dividing the daily differences by 24, and multiplying the quotient by the hours and fractions of the longitude of the place. The product is subtractive from the time of Greenwich passage when the place is east of Greenwich, and additive when west. The corrections can never exceed one-half the change for one day.

Pages 250—263 contain the heliocentric positions of the seven major planets, and the logarithms of their distances from the earth. The heliocentric longitude is reckoned, not from the true equinox, as in the preceding ephemerides, but from the mean equinox of the date. It is, therefore, necessary to apply nutation, if the longitude from the true equinox is required. The daily motion is given for the moment of Greenwich mean noon. The column *Reduction to Orbit* gives the correction to be applied to the heliocentric longitudes in order to obtain the longitude counted along the orbit of the planet. This longitude is equal to the distance of the node from the mean equinox, plus the distance of the planet from the node. The heliocentric latitude is counted from the moving plane of the ecliptic. The *Logarithm of Radius Vector* is the logarithm of the distance of the centre of the planet from that of the sun, at each Greenwich mean noon given in the first column. The two last columns give, in the same way, the logarithm of the true distance of the centre of the planet from that of the earth. The one column gives the quantity for the Greenwich noon indicated on the left hand side of the page, and the other for the noon which is midway between that date and the date next below it. In the case of Mercury, this intermediate date is mean noon of the day immediately following; in the case of Venus, Mars, Jupiter, and Saturn, it is mean noon of the second day following; and in the case of Uranus and Neptune, mean noon of the fourth day following.

Pages 264—271 contain the rectangular co-ordinates of the centre of the sun, referred to the centre of the earth as the origin, and to the true equator and equinox of each date as the circle and point of reference. Each co-ordinate is given first for Greenwich mean noon, and in the column following for mean midnight of the same day. The columns *Reduc. to Mean Eq'x of Jan. 0* give the corrections to be applied to the co-ordinates for noon in order to obtain the corresponding co-ordinates referred to the mean equator and the mean equinox of January 0.

Pages 272—275 give the longitude and latitude of the moon for every Greenwich mean noon and midnight. Both quantities are referred to the true ecliptic and equinox of the date.

Pages 276 and 277 contain the position of the moon's equator and the mean longitude of the moon, and a table for computing the libration of the moon. The epochs of greatest libration of the moon, together with the formulæ for finding the libration in longitude and latitude are given on page 417.

Page 278 contains, for each tenth Greenwich mean noon, the values of the principal elements arising from the motion of the equinox, and also the aberration and parallax of the sun. The column *Apparent Obliquity of the Ecliptic* (HANSEN) gives the true inclination of the earth's equator to the ecliptic, without correction for the terms depending on the moon's longitude. The *Equation of Equinoxes* (HANSEN) is really the astronomical nutation; that given *In Longitude* is the correction to be applied to the longitude of the body referred to the mean equinox, in order to obtain that longitude as referred to the true equinox. When the correction is positive, the true longitudes are greater than those referred to the mean equinox; while the contrary is true when the correction has the negative sign. The equation *In R. A.* is equal to that in longitude, multiplied by the cosine of the obliquity of the ecliptic.

The next column gives the *Precession of Equinoxes in Longitude*, from January 0 to each of the dates following. The *Sun's Aberration* is the quantity which is to be applied to the true longitude of the sun in order to obtain its apparent longitude. The correction being negative shows that the apparent longitude as affected by aberration is always less than the true longitude. The *Sun's Equatorial Horizontal Parallax*, given in the next column, is the angle subtended by the radius of the earth's equator, as seen from the centre of the sun.

PART II—THE EPHEMERIS FOR THE MERIDIAN OF WASHINGTON.

Page 280 contains the formulæ for reducing the positions of the fixed stars, using the notation of BESSEL, and the constants of PETERS and STRUVE. The formulæ by which the star-numbers are computed are also given.

Pages 281—284 contain the logarithms of the *Besselian Star Numbers*, *A, B, C, D*, for each Washington mean midnight. These numbers serve to reduce the mean place of a star at the beginning of the Besselian fictitious year to its apparent place at the dates for which the numbers are given. If used in accordance with the English and French notation, the pair of quantities *A* and *B* must be interchanged with the pair *C* and *D*; that is, *A* must be interchanged with *C*, and *B* with *D*. In the first column along with the solar day is given, for certain dates, the sidereal hour of Washington mean midnight. The sidereal time for which any set of quantities is given can be found by interpolation from these numbers.

The following is an example of the reduction of a star to apparent place by the Besselian star-numbers:—

Computation of the apparent place of δ Ophiuchi for 1897, May 29, for the upper transit at Washington.

	$\log a$	0.4974	$\log b$	7.2703	$\log c$	8.4930 <i>n</i>	$\log d$	8.7716 <i>n</i>
(Page 282)	$\log A$	9.8148	$\log B$	0.7343 <i>n</i>	$\log C$	0.8275 <i>n</i>	$\log D$	1.2808 <i>n</i>
	$\log a'$	0.9705 <i>n</i>	$\log b'$	9.9469	$\log c'$	9.5798	$\log d'$	8.4456
	$\log A a$	0.3122	$\log B b$	8.0046 <i>n</i>	$\log C c$	9.3205	$\log D d$	0.0524
	$\log A a'$	0.7853 <i>n</i>	$\log B b'$	0.6812 <i>n</i>	$\log C c'$	0.4073 <i>n</i>	$\log D d'$	9.7264 <i>n</i>

<i>Mean Place, 1897.0,</i>	$\alpha_0 = 16^{\text{h}} 8^{\text{m}} 56.842^{\text{s}}$	$\delta_0 = -3^{\circ} 25' 44.62''$
	$A a = + 2.052$	$A a' = - 6.10$
	$B b = - 0.010$	$B b' = - 4.80$
	$C c = + 0.209$	$C c' = - 2.55$
	$D d = + 1.128$	$D d' = - 0.53$
	$E = + 0.001$	$\tau \mu' = - 0.06$
	$\tau \mu = - 0.001$	

<i>Apparent Place, 1897, May 29,</i>	$\alpha = 16^{\text{h}} 9^{\text{m}} 0.221^{\text{s}}$	$\delta = -3^{\circ} 25' 58.66''$
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Pages 285—292 contain the *Independent Star-Numbers*, which can be used for the same purpose. The column τ gives the fraction of the year from the beginning of the fictitious year to each date. These quantities are connected with those of BESSEL by the relations given on page 280, where are also found the formulæ and precepts for the application of both systems of numbers. In order to use the Besselian numbers, it is necessary to have the values of the star-constants, *a, b, c, d, a', b', c', d'*. The independent star-numbers are

given in order that the apparent place of the star may be determined when it is not convenient to compute these numbers.

The following is an example of the reduction of a star to apparent place by the independent star-numbers:—

Computation of the apparent place of δ Ophiuchi for 1897, May 29, for the upper transit at Washington.

$a_0 = 242^{\circ} 14'$		$\delta_0 = - 3^{\circ} 26'$	
$G = 337 30$		$G + a_0 = 219 44$	
$H = 199 25$		$H + a_0 = 81 39$	
$\log \frac{1}{r}$ 8.8239	$\log \frac{1}{r}$ 8.8239	$a_0 =$	$\begin{matrix} h & m & s \\ 16 & 8 & 56.842 \end{matrix}$
$\log g$ 1.1514	$\log h$ 1.3061	$f =$	$+ 2.007$
$\log \sin (G + a_0)$ 9.8057 n	$\log \sin (H + a_0)$ 9.9954	$(g) =$	$+ 0.036$
$\log \tan \delta_0$ 8.7781 n	$\log \sec \delta_0$ 0.0008	$(h) =$	$+ 1.337$
$\log (g)$ 8.5591	$\log (h)$ 0.1262	$\tau \mu =$	$- 0.001$
	<i>Apparent R. A.,</i>	$a =$	$\begin{matrix} 16 & 9 & 0.221 \end{matrix}$
$\log g$ 1.1514	$\log h$ 1.3061	$\delta_0 = -$	$\begin{matrix} 3^{\circ} & 25' & 44.62 \\ & & & \end{matrix}$
$\log \cos (G + a_0)$ 9.8859 n	$\log \cos (H + a_0)$ 9.1620	$(g') =$	$- 10.90$
$\log (g')$ 1.0373 n	$\log \sin \delta_0$ 8.7773 n	$(h') =$	$- 0.18$
	$\log (h')$ 9.2454 n	$(i) =$	$- 2.92$
		$\tau \mu' =$	$- 0.06$
	<i>Apparent Dec.</i>	$\delta = -$	$\begin{matrix} 3 & 25 & 58.67 \end{matrix}$
$\log i$ 0.4653 n			
$\log \cos \delta_0$ 9.9992			
$\log (i)$ 0.4645 n			

Pages 293—301 contain the mean places of three hundred and eighty-three stars, for the beginning of the fictitious year 1897, or the moment when the sun's mean longitude is 280° .

The annual variations are to be considered as the differential coefficients of each co-ordinate with respect to the time at the beginning of the year.

In order that the list of mean places of stars may serve the purpose of a working-catalogue for the convenient use of astronomers, the position of each of the northern circumpolar stars is given in duplicate, one position being for the upper and the other for the lower culmination. The positions for the lower culmination are marked S. P. In this case, the right ascensions are the sidereal times at which the star crosses the lower meridian; and, in order to have the expressions for the co-ordinates congruous in all cases, the declinations are counted from the equator through the north pole, and therefore exceed 90° . The time of observation and the setting of the circle, in order to find a star on the meridian, are then obtained uniformly for all the stars.

Beginning with the volume of 1882, the number of stars has been greatly increased, in order to make the list more useful to field-astronomers. To show at a glance these additional stars, they are indicated in the list by an asterisk.

Pages 302—313 contain the apparent positions of the four north polar stars, α , δ and λ Ursæ Minoris, and γ Cephei, for every upper transit at Washington. They include the terms depending on the moon's longitude. The mean solar time of transit is given in the column *Mean Solar Date*, in order that each transit above and below the pole may be readily identified. Suppose, for example, that the transit of Polaris below the pole on January 26th is to be found, and we wish to know whether it precedes or follows the upper transit of the same date. On page 302, we find that the upper transit occurs January 26.2; the lower transit, therefore, occurs January 26.7. But, the lower transit following that of July 1st (page 308), does not take place until July 2.3. Hence, the lower transit of July 1st precedes the upper one of the same date. A transit occurring very nearly at noon may also be identified without a computation, to ascertain the actual mean date, by simply noting the tenth of a day in the column of *Mean Solar Date*.

Pages 314—364 contain, for every tenth upper transit at Washington, the apparent places of those stars of the preceding list which are not marked with an asterisk. The mean solar

date in each left hand column gives the day and tenth of the transit; so that each intermediate transit may be readily identified. Along with each co-ordinate is given, in small type, the change for ten days. This quantity is to be regarded as the differential coefficient corresponding to the dates for which the star-places are given.

Pages 365—376 contain the apparent right ascensions of all stars marked with an asterisk in the list of mean places. The apparent right ascension of each star is given only for that part of the year when it may readily be observed on the meridian. In the case of circumpolar stars, the right ascensions for lower, as well as upper, transit are given.

Pages 377—384 contain the apparent right ascension, declination, and semidiameter of the sun, and the sidereal time, all for Washington mean noon. Adjoining columns give the seconds of right ascension and of declination for apparent noon, that is, for the moment of transit of the sun's centre over the meridian of Washington. The hours and minutes of right ascension, and the degrees and minutes of declination are the same for both mean and apparent noon. In case they would have differed, the minute which would have been numerically larger is diminished by one, and the seconds increased by sixty, so that there is always a correspondence between the two numbers. The hourly motions in right ascension and declination are given for the moment of mean noon, but may be regarded as having the same values for apparent noon.

The *Equation of Time for Apparent Noon* is the correction to be applied to apparent time in order to obtain mean time. It is, therefore, mean time minus apparent time. Each number as given is the mean time of transit of the sun's centre over the meridian of Washington, counted from the nearest noon. The use of all the quantities is substantially the same as in the *Ephemeris for the Meridian of Greenwich*.

Pages 385—392 contain the right ascension, declination, semidiameter, and parallax of the moon, at the moment of transit over the meridian of Washington. The mean time given in the second column is that of transit of the moon's centre over this meridian. The differences for one hour of longitude are the amounts by which the local mean times of transit over a meridian one hour west of Washington exceed those given in the column *Mean Time of Transit*, supposing the rate of change to be uniform and equal to what it is at the moment of transit over the meridian of Washington. The next four columns need no especial explanation, except that the differences for one hour of longitude are computed as if the motion of the moon in right ascension were uniform. By means of them, the position of the moon can be computed with astronomical accuracy at the moment of transit over any meridian not exceeding one hour in longitude from that of Washington, by taking account of second differences. With greater longitudes of the place, the accuracy of the result obtained in this way will diminish. The columns of sidereal time of semidiameter passing meridian, etc., do not seem to need any explanation, except that they all refer to the moment of transit. The column *Bright Limbs* is given to indicate to the observer which limbs are illuminated. When two opposite limbs are both so nearly full that they can be well observed, both are indicated.

Pages 393—409 contain the geocentric apparent right ascensions and declinations of the seven major planets, and their semidiameters and horizontal parallaxes, for the moments of all those transits over the meridian of Washington which can be observed.

PART III—PHENOMENA.

This part gives the principal astronomical phenomena of the year, reduced to Washington mean time, except in the case of the eclipses and the data for the rings of Saturn, which are given in Greenwich mean time.

Pages 412—416 inclusive contain the elements necessary for computing the eclipses of the sun which occur during the year.

The eclipse-elements are given for the moment of conjunction of the sun and moon in right ascension. The subsequent tables and results are not, however, computed from these elements unchanged; but from the accurate positions of the two bodies as interpolated for each hour of the eclipse. The principal circumstances of each eclipse are as follows:—

On the line "Eclipse begins" is given the Greenwich mean time at which the earth first touches the moon's penumbra, and the longitude and latitude of the point of touching.

The "Central eclipse begins" when the axis of the moon's shadow first touches the earth, and the longitude and latitude of the point of touching follow.

"Central eclipse at noon" indicates the moment when the axis of the shadow is coincident with the plane of the meridian at the point of its intersection with the earth's surface. To the observer at this point the eclipse will be central at the moment of apparent noon.

"Central eclipse ends" and "Eclipse ends" have the converse meaning of the beginning.

Maps of the Eclipses.—The regions in which each eclipse is visible, are shown upon the maps given in connection with them. From these maps may also be derived the approximate determination of the times of beginning and ending, and of the magnitude of the eclipses at any place. The dotted curves show the outlines of the shadow for each hour of Greenwich mean time and therefore pass through all the places where the eclipse begins or ends at that hour. To find at what hour the eclipse begins at any place, we determine by inspection between what pair of these curved lines the place is situated. The eclipse will then begin between these two hours of Greenwich mean time: the fraction of the hour may be determined by dividing the hour proportionally to the space which it represents on the map. This division may be a little more exact by allowing for the changes in this space as indicated by their varying width. The Greenwich mean time thus found must be reduced to local mean time by applying the longitude.

As an example, suppose we wish to find the time at which the eclipse of 1897, July 29, begins and ends at Barbados.

For the beginning we compare the distance of the place from the curves of 2^h and 3^h and we find it to correspond to about 12 minutes from the former, therefore the time of beginning is approximately 2^h 12^m; for the end we compare the distance of the place from the curves of 5^h and 6^h and find it to be about 19 minutes from the latter, therefore the approximate time of end is 5^h 41^m, both of which are probably correct to within 2 or 3 minutes. Changing to local mean time the result will be:—

		Beginning.			Ending.		
		d	h	m	d	h	m
Greenwich mean time	July	29	2	12	29	5	41
Longitude west			3	58		3	58
Local mean time	July	28	22	14	29	1	43

In the case of total and annular eclipses, a rough estimate of the magnitude of the eclipse may be obtained from the position of the place relatively to the central line and to the limit. On the central line, the eclipse is annular or total, while on the limit, the limb of the moon only grazes that of the sun.

More Accurate Computations.—A more accurate determination of the phases as visible at any point of the earth's surface may be obtained from the Besselian elements which are given for every ten minutes of Greenwich mean time. Their geometric signification is as follows:—

Let us imagine a plane passing through the centre of the earth, perpendicular to the right line joining the centres of the sun and moon. This latter line is the axis of the moon's shadow, and the plane is called the *fundamental plane*. We take the intersection of this plane with that of the earth's equator as the axis of *X*, and the centre of the earth as the origin of co-ordinates. The axis of *Y* is perpendicular to that of *X*, and directed toward the north; *x* and *y* are then the co-ordinates of the point in which the axis of the shadow intersects the fundamental plane. The angle *d*, of which the sine and cosine are both given, is the declination of that point of the celestial sphere toward which the axis of the

shadow is directed; this direction being that from the earth toward the moon and sun. The angle μ is the Greenwich hour-angle of this same point of the celestial sphere.

The quantities l and l' are the radii of the shadow-cones upon the fundamental plane, l corresponding to the penumbra, and l' to the umbra, or annulus. The notation is that of CHAUVENET'S *Spherical and Practical Astronomy*, in which l' is regarded as positive for an annular, and negative for a total eclipse.

The angles f and f' , the tangents of which are given, are the angles which the elements of the respective shadow-cones make with the axis of the shadow; or, they are the semi-angles of the two cones.

At the bottom of the table are given the logarithms of the change of x , y and μ , in one minute, in order to facilitate the interpolation to any required moment.

The method of computing the eclipse from the given elements is as follows: It is premised that the moments of beginning and ending are those at which the distance of the observer from the axis of the shadow or penumbra is equal to the radius of the latter at the point of observation. To find such distance and radius we compute—

(1) The co-ordinates, ξ , η and ζ , of the observer, at some assumed moment of Greenwich mean time, as near as practicable to the true time of the required phase, together with their variations for one minute.

(2) The co-ordinates x and y of the axis of the shadow at the same moment, which, with their variations for one minute, are taken from the tables of elements.

(3) Hence, the position and motion of the observer relative to the axis of the shadow.

(4) The radius of the penumbra or umbra at a distance from the fundamental plane equal to that of the observer.

(5) Then, assuming the motions to be uniform, we determine the time required for the observer to be brought to a distance from the axis of the shadow equal to this radius.

The formulæ and directions for the several steps in the computation are as follow:—

(1) Find the geocentric co-ordinates of the station referred to the earth's equator, which are represented by $\rho \cos \varphi'$ and $\rho \sin \varphi'$, ρ being the distance from the centre of the earth, and φ' the geocentric latitude. These may be obtained from geodetic tables, or may be computed from the following table by the formulæ—

$$\rho \cos \varphi' = F \cos \varphi$$

$$\rho \sin \varphi' = \frac{\sin \varphi}{G}$$

φ being, as usual, the geographic latitude.

Table for Computing the Geocentric Co-ordinates of a Place.

φ	Log F.	Log G.
0°	0.00000	0.00295
5	0.00001	0.00294
10	0.00004	0.00291
15	0.00010	0.00285
20	0.00017	0.00278
25	0.00026	0.00269
30	0.00037	0.00258
35	0.00048	0.00247
40	0.00061	0.00234
45	0.00074	0.00221
50	0.00086	0.00209
55	0.00099	0.00196
60	0.00111	0.00184
65	0.00121	0.00174
70	0.00130	0.00165
75	0.00138	0.00157
80	0.00143	0.00152
85	0.00146	0.00149
90	0.00147	0.00147

For the assumed Greenwich mean time of computation, take from the table of elements the values of $\sin d$, $\cos d$, and μ . Put:

λ , the longitude west from Greenwich. The co-ordinates of the observer will then be:—

$$\begin{aligned}\xi &= \rho \cos \varphi' \sin (\mu - \lambda) \\ \eta &= \rho \sin \varphi' \cos d - \rho \cos \varphi' \sin d \cos (\mu - \lambda) \\ \zeta &= \rho \sin \varphi' \sin d + \rho \cos \varphi' \cos d \cos (\mu - \lambda)\end{aligned}$$

and their variations in one minute of mean time will be:—

$$\begin{aligned}\xi' &= [7.63992] \rho \cos \varphi' \cos (\mu - \lambda) \\ \eta' &= [7.63992] \rho \cos \varphi' \sin d \sin (\mu - \lambda) = [7.63992] \xi \sin d \\ \zeta' &\text{ is not needed.}\end{aligned}$$

(2) The co-ordinates x and y of the axis of the shadow are taken from the tables of elements for the same assumed moment of Greenwich mean time, together with their variations for one minute, which are equal to one-tenth of the differences of two consecutive numbers. The variations for one minute are represented by x' and y' . Their logarithms are given at the foot of the tables.

(3) The distance m and position-angle M of the axis of the shadow relative to the observer, and the relative motions, n and N , are computed by the formulæ:—

$$\begin{aligned}m \sin M &= x - \xi \\ m \cos M &= y - \eta \\ n \sin N &= x' - \xi' \\ n \cos N &= y' - \eta'\end{aligned}$$

(4) The radius L of the shadow or penumbra at the distance ζ from the fundamental plane is computed by the formula

$$L = l - \zeta \tan f$$

l and f being found in the table of elements, and ζ computed in (1).

(5) If the time chosen for computation is exactly that of the beginning or end of the eclipse, we shall have—

$$m = L$$

But, as this condition can scarcely ever be fulfilled on a first trial, a correction τ to the assumed time is computed thus: Find the angle ϕ from the equation,

$$\sin \phi = \frac{m \sin (M - N)}{L}$$

There will be two values to this angle, of which one will be in the first and the other in the second quadrant when $\sin \phi$ is positive, and one in the third and the other in the fourth when $\sin \phi$ is negative. But, simplicity will be gained by taking only that value of ϕ for which $\cos \phi$ is positive. This value lies between the limits $+90^\circ$ and -90° . The correction τ to the assumed time will be found in minutes, from—

For beginning:

$$\tau = - \frac{m \cos (M - N)}{n} - \frac{L \cos \phi}{n}$$

For ending:

$$\tau = - \frac{m \cos (M - N)}{n} + \frac{L \cos \phi}{n}$$

One such pair of values of τ cannot, however, give the times of both beginning and ending with accuracy. To attain accuracy we must, in commencing the computation, assume two times, one near that of beginning, and another near that of ending. These approximate times may be derived from the chart of the eclipse. The computation for the first assumed time will give a small value of τ which, applied to the assumed time, will give a nearly correct time for the beginning of the eclipse, and a large value which, added to the assumed time, will give an inaccurate time of ending. The computation for the second assumed time will give a small and nearly correct value of τ , to be applied to the assumed time for the end, and a large negative and inaccurate one to be subtracted for the beginning. We shall thus deduce two times of each phase, only one of which is to be considered approximately correct.

The more accurate times of beginning and ending may now be taken in place of the first assumed ones, and the computation may be repeated from the beginning, leading to a pair of values of τ , which should be very small and accurate. Such a repetition of the computation will in general be advisable, to guard against accidental numerical errors. The following theorem will, however, enable us to obtain a second approximation to the true times of each phase without repeating the computation.

THEOREM.—*The error of each result is approximately proportional to the square of the correction τ , multiplied by the sine of the sun's hour-angle, $(\mu-\lambda)$, for the middle of the interval between the time of computation and that of the phase.*

To apply this theorem we find the two values of $\tau^2 \sin (\mu-\lambda)$ corresponding to the required phase. We then find the ratio of these quantities—which will commonly be a large number, and divide the difference of the results by this ratio. The quotient will be a correction to be applied to the more accurate result in such a way as to make it deviate yet more from the less accurate one. This correction should be positive in the local forenoon, and negative in the afternoon, and its value should never materially exceed $0^m.001 \tau^2$.

Unless the times chosen for computation are unusually in error, say ten minutes or more, the corrected results thus obtained will be theoretically correct within less than a second. But to guard against numerical errors it is better, after making this final correction, to repeat the computations so far as to obtain new values of m and L for the corrected times. If these two quantities agree within a unit of the fourth place of decimals, the times employed are generally correct within a second of time. If they differ too widely, further corrections and computations may be made by the computer according to his own judgment.

It may be remarked that the uncertainty of the ephemerides is such that a prediction may be several seconds in error from this unavoidable cause alone.

Position-angle of Point of Contact.—The position-angle P , of the point of contact, reckoned from the north point of the sun's limb toward the east, is found by the formula

$$\text{For beginning:} \quad P = N - \phi \pm 180^\circ$$

$$\text{For end:} \quad P = N + \phi$$

it being assumed that, in each case, the value of ϕ is taken between the limits $\pm 90^\circ$.

Computation of the Solar Eclipse of 1897, July 29, for St. John, Island of Antigua, whose position is—

$$\text{Latitude, } \varphi = + 17^\circ 6' 13''$$

$$\text{Longitude, } \lambda = + 61^\circ 50' 28''$$

Constants for the given place:—

$$\rho \sin \varphi' = 9.46568$$

$$\rho \cos \varphi' = 9.98048$$

From the Eclipse Charts we find the approximate times of the phases to be—

Beginning	July 29	^d 2	^h 0	} Greenwich Mean Time.
Annulus		3	45	
Ending		5	30	

Greenwich Mean Time,	July	Beginning.			Annulus.	Ending.
		29 ^d	2 ^h	0 ^m	3 ^h 45 ^m	5 ^h 30 ^m
		μ	28	26 30	54 41 42	80 56 54
		λ	+	61 50 28	61 50 28	61 50 28
		$\mu-\lambda$	—	33 23 58	— 7 8 46	+ 19 6 26
		$\rho \cos \varphi'$		9.98048	9.98048	9.98048
		$\sin (\mu-\lambda)$		9.74074 π	9.09482 π	9.51500
		$\log \xi$		9.72122 π	9.07530 π	9.49548
		ξ	—	0.52628	— 0.11893	+ 0.31295

Greenwich Mean Time,	July	Beginning.		Annulus.		Ending.	
		29 ^d	2 ^h 0 ^m	3 ^h 45 ^m	5 ^h 30 ^m		
	$\rho \sin \varphi'$		9.46568	9.46568	9.46568		
	$\cos d$		9.97664	9.97669	9.97673		
			9.44232	9.44237	9.44241		
	(1)	+	0.27690	+	0.27693	+	0.27696
	$\rho \cos \varphi'$		9.98048	9.98048	9.98048		
	$\sin d$		9.50426	9.50389	9.50351		
	$\cos (\mu - \lambda)$		9.92161	9.99661	9.97539		
			9.40635	9.48098	9.45938		
	(2)	+	0.25489	+	0.30268	+	0.28799
(1) — (2)	η	+	0.02201	—	0.02575	—	0.01103
	$\rho \sin \varphi' \sin d$		8.96994	8.96957	8.96919		
	(3)	+	0.09331	+	0.09323	+	0.09315
	$\rho \cos \varphi' \cos d \cos (\mu - \lambda)$		9.87873	9.95378	9.93260		
	(4)	+	0.75636	+	0.89904	+	0.85625
(3) + (4)	ζ	+	0.84967	+	0.99227	+	0.94940
	const. log		7.63992	7.63992	7.63992		
	$\rho \cos \varphi' \cos (\mu - \lambda)$		9.90209	9.97709	9.95587		
	$\log \xi'$		7.54201	7.61701	7.59579		
	ξ'	+	0.003483	+	0.004140	+	0.003943
	const. log		7.63992	7.63992	7.63992		
	$\xi \sin d$		9.22548 <i>n</i>	8.57919 <i>n</i>	8.99899		
	$\log \eta'$		6.86540 <i>n</i>	6.21911 <i>n</i>	6.63891		
	η'	—	0.000733	—	0.000166	+	0.000435
	$x - \xi$	—	0.46989	—	0.00406	+	0.43713
	$y - \eta$	+	0.27592	+	0.00214	—	0.33479
	$x' - \xi'$	+	0.004833	+	0.004176	+	0.004371
	$y' - \eta'$	—	0.002325	—	0.002899	—	0.003507
	<i>m</i> sin <i>M</i>		9.67200 <i>n</i>	7.60853 <i>n</i>	9.64061		
	<i>m</i> cos <i>M</i>		9.44078	7.33041	9.52477 <i>n</i>		
	$\tan M$		0.23122 <i>n</i>	0.27812 <i>n</i>	0.11584 <i>n</i>		
	<i>M</i>	300 25 16		297 47 35	127 26 52		
	$\cos M$		9.70445	9.66865	9.78393 <i>n</i>		
	$\log m$		9.73633	7.66176	9.74084		
	<i>n</i> sin <i>N</i>		7.68422	7.62076	7.64058		
	<i>n</i> cos <i>N</i>		7.36642 <i>n</i>	7.46225 <i>n</i>	7.54494 <i>n</i>		
	$\tan N$		0.31780 <i>n</i>	0.15851 <i>n</i>	0.09564 <i>n</i>		
	<i>N</i>	115 41 25		124 46 7	128 44 30		
	$\cos N$		9.63700 <i>n</i>	9.75608 <i>n</i>	9.79644 <i>n</i>		
	$\log n$		7.72942	7.70617	7.74850		
	$\tan f$		7.66345	7.66129	7.66346		
	$\log \zeta$		9.92925	9.99663	9.97745		
			7.59270	7.65792	7.64091		
	$\zeta \tan f$	+	0.00391	+	0.00455	+	0.00437
	<i>l</i>	+	0.55356	+	0.00746	+	0.55318
	<i>L</i>	+	0.54965	+	0.00291	+	0.54881

Greenwich Mean Time,	July	Beginning. 29 ^d 2 ^h 0 ^m	Annulus 3 ^h 45 ^m	Ending. 5 ^h 30 ^m
$M - N$		184 43 51	173 1 28	- 1 17 38
$\sin (M - N)$		8.91632 <i>n</i>	9.08438	8.35375 <i>n</i>
$\log m$		9.73633	7.66176	9.74084
$\text{colog } L$		0.25991	2.53611	0.26058
$\sin \phi$		8.91256 <i>n</i>	9.28225	8.35517 <i>n</i>
ϕ		- 4 41 24	+ 11 2 33	- 1 17 54
$\log \frac{m}{n}$		2.00691	9.95559	1.99234
$\cos (M - N)$		9.99852 <i>n</i>	9.99677 <i>n</i>	9.99989
		2.00543 <i>n</i>	9.95236 <i>n</i>	1.99223
$-\frac{m}{n} \cos (M - N)$		+ 101.258	+ 0.896	- 98.227
$\log L$		9.74009	7.46389	9.73942
$\cos \phi$		9.99855	9.99188	9.99989
$\text{colog } n$		2.27058	2.29383	2.25150
		2.00922	9.74960	1.99081
$\frac{L \cos \phi}{n}$		∓ 102.145	∓ 0.562	± 97.906
τ		^m - 0.887	^m + 0.334 + 1.458	^m - 0.321
T		^h ^m 2 0	^h ^m 3 45	^h ^m 5 30
t		1 59.113	3 45.334 3 46.458	5 29.679
λ		+ 4 7.365	4 7.365	4 7.365
		^d ^h ^m	^d ^h ^m	^d ^h ^m
Local Mean Time,	July	28 21 51.748	28 23 37.969 28 23 39.093	29 1 22.314
Duration of Annulus,			^m 1.124	

No correction is necessary since the assumed times differ very little from the computed ones.

Therefore we have

Beginning of the eclipse,	July	^d ^h ^m ^s 28 21 51 44.9	} Local Mean Time.
Beginning of Annulus,	"	28 23 37 58.1	
End of Annulus	"	28 23 39 5.6	
End of the eclipse,	"	29 1 22 18.8	

Angle of position:

	Beginning.	Ending.
N	115 41.4	128 44.5
$\phi (+ 180)$	184 41.4	- 1 17.9
P	300 22.8	127 26.6

from the north point of the sun's disk towards the east for direct image.

Pages 418—421 contain the mean places for 1897.0 of stars occulted by the moon in 1897, with their annual proper motions.

Elements of Occultations.—Pages 422—451 give the elements for the prediction of the times of occultation of stars and planets by the moon. In the columns referring to the star, those headed *Red'ns from 1897.0* give the quantities necessary to reduce the mean place of the star at the beginning of 1897 to its apparent place at the time of occultation. These reductions are sufficiently accurate to be definitive.

The quantities in the following five columns are all given for the moment of geocentric conjunction of the star and moon in right ascension. Let there be a line passing from the star through the centre of the moon, and let a plane perpendicular to this line pass through the centre of the earth: this plane will be the fundamental plane for the occultation. The system of co-ordinates is similar to that already described for eclipses. The cone circumscribing the moon and star may be regarded as a cylinder having everywhere the same diameter as the moon. This cylinder will intercept the fundamental plane in a circle of which the linear diameter will be the same as that of the moon.

The *Washington Mean Time* is the moment at which the two bodies are in geocentric conjunction in right ascension. At this moment the co-ordinate x of the axis of the cylinder on the fundamental plane has the value zero. The column *Hour-Angle H* gives the common geocentric hour-angle of the moon and star at the same moment, counted from the meridian of Washington—positive toward the west and negative toward the east. Column Y gives the co-ordinate y of the axis of the cylinder upon the fundamental plane at the same moment. Columns x' and y' give the hourly variation of x and y . The linear unit in these columns is the earth's equatorial radius. The limiting parallels, north and south, show the extreme limits of latitude within which the occultation will be visible.

By the aid of these elements, the Washington mean time of immersion and emersion of a star behind the limb of the moon may be computed for any part of the earth by a method nearly the same as that already explained for computing eclipses, only more simple.

We shall first show how to compute an isolated occultation for a particular place, assuming it to be visible at that place, and then show how all the occultations which will be visible at a place may be selected and computed by a more rapid process.

(1) The geocentric co-ordinates of the place, $\rho \sin \varphi'$ and $\rho \cos \varphi'$, are to be computed with three or four places of decimals by the formulæ,

$$\begin{aligned}\rho \sin \varphi' &= \frac{\sin \varphi}{G} \\ \rho \cos \varphi' &= F \cos \varphi\end{aligned}$$

already given in connection with eclipses.

As in the case of eclipses, it is necessary to have an approximate time of the phenomenon, corresponding to that obtained from the charts of the eclipses. The quantity H being the Washington west hour-angle of the two bodies at the moment of geocentric conjunction, $H - \lambda$ will be the local hour-angle of the star at this same moment. Let us call this angle h_0 , putting

$$h_0 = H - \lambda$$

where λ is the longitude west of *Washington*.

The next step will then be to find the approximate moment of apparent conjunction in right ascension as seen from the place. An approximate correction to reduce the time and hour-angle for geocentric conjunction to those for apparent conjunction may be taken from Mr. DOWNES's table, on pages 454—455. This correction will have the same sign as h_0 .

When this table is not available, the correction may be computed thus: Compute the quantities ξ_0 , ξ' and τ from the formulæ,

$$\begin{aligned}\xi_0 &= \rho \cos \varphi' \sin h_0 \\ \xi' &= [9.4192] \cos (h_0 + \frac{1}{3} h_0) \\ \tau &= \frac{\xi_0}{x' - \xi'}\end{aligned}$$

τ will then be the approximate interval between the times of geocentric and local conjunction. By applying it to the Washington mean time of the former, as given with the elements, we shall have the Washington mean time of the latter within a few minutes.

The average duration of an occultation is about an hour. Thence, by adding $0^h.5$ to and subtracting it from the mean time of apparent conjunction, we shall have approximate times of the phases of immersion and emersion for farther computation. Let us then put,

$$\tau_1 = \tau - 0^h.5$$

$$\tau_2 = \tau + 0^h.5$$

T , the Washington mean time of geocentric conjunction in R. A.

d , the declination of the star.

(2) Compute for the moments $T + \tau_1$ and $T + \tau_2$ the following quantities, in which we write τ for each of the quantities τ_1 and τ_2 . The latter, when used as angles, are to be changed to arc by multiplying by 15, and the minutes are to be further increased by one-sixth the number of degrees in order to reduce to the sidereal hour-angle.

$$\xi = \rho \cos \phi' \sin (h_0 + \tau)$$

$$\eta = \rho \sin \phi' \cos d - \rho \cos \phi' \sin d \cos (h_0 + \tau)$$

$$\xi' = [9.41916] \rho \cos \phi' \cos (h_0 + \tau)$$

$$\eta' = [9.41916] \rho \cos \phi' \sin d \sin (h_0 + \tau) = [9.41916] \xi \sin d$$

$$x = x' \tau$$

$$y = Y + y' \tau$$

Compute m , M , n and N from the equations

$$m \sin M = x - \xi$$

$$m \cos M = y - \eta$$

$$n \sin N = x' - \xi'$$

$$n \cos N = y' - \eta'$$

$$n' = \frac{n}{60} = [8.22185] n$$

$$\sin \psi = [0.56500] m \sin (M - N)$$

Then, t_1 and t_2 from the equations

$$t_1 = -\frac{m}{n'} \cos (M - N) - \frac{[9.43500]}{n'} \cos \psi \quad (\text{Beginning.})$$

$$t_2 = -\frac{m}{n'} \cos (M - N) + \frac{[9.43500]}{n'} \cos \psi \quad (\text{End.})$$

The quantities t_1 and t_2 will then be the corrections in minutes to be applied to the respective times $T + \tau_1$ and $T + \tau_2$ to obtain the Washington mean times of the phases.

As in the case of eclipses, the small value of t_1 will give an accurate result for one phase, and the large value an inaccurate result for the other. Both accurate results may then be corrected by comparison with the inaccurate one, in the way described for eclipses, and a result obtained which will probably be correct within a fraction of a minute of time.

As a check upon the result, it will be advisable to compute ξ , η , x and y for the moments finally obtained. If the times are correct these quantities will fulfil the condition,

$$\sqrt{(x - \xi)^2 + (y - \eta)^2} = 0.27227$$

If $\log m \sin (M - N) = 9.43500$ nearly, a recalculation will generally be necessary to determine whether, numerically, $\sin \psi < 1$, or $\sin \psi > 1$. In the latter case, the impossible value of $\sin \psi$ indicates that an occultation at the given place is impossible, unless the computed distance from the moon's limb is within the errors of the ephemerides of the moon and star.

In such cases of near approach to the moon's limb, we may take $\psi = 90^\circ$, or 270° , according as $\sin (M - N)$ is positive or negative; and for finding the time of nearest approach,

$$t = -\frac{m \cos (M - N)}{n'}$$

Putting π for the moon's horizontal parallax, the distance from the moon's limb will be,

$$\pi [m \sin (M - N) - 0.27227]$$

disregarding the sign of $\sin (M - N)$; or, allowing for the augmentation of the semidiameter,

$$\pi [m \sin (M - N) - 0.27227] [1 + s \sin \pi]$$

where

$$s = \rho \cos \varphi' \cos d \cos (h_0 + \tau) + \rho \sin \varphi' \sin d$$

The position-angle P , of the line from the moon's centre to the star at the times of contact, reckoned from the north point toward the east, is given by the formulæ:—

$$P = N - \psi \quad \text{for immersion,}$$

$$P = N + \psi \pm 180^\circ \quad \text{for emersion,}$$

it being supposed that the value of ψ , in each case, is taken between the limits $\pm 90^\circ$.

To find the angle from the vertex, we compute the angle C from the formula,

$$\tan C = \frac{\xi + t \xi'}{\eta + t \eta'}$$

in which the value of t corresponding to the phase is to be used. Then

$$V = P - C$$

is the angle from the vertex, also reckoned from the north toward the east.

As an example of an isolated occultation, we will compute that of η Tauri, on Nov. 9, 1897, for Northfield, whose position is

$$\varphi = + 44^\circ 27' 41''.6$$

$$\lambda = + 1^h 4^m 23^s.77$$

Constants for the given place,

$$\rho \sin \varphi' = 9.84314$$

$$\rho \cos \varphi' = 9.85425$$

From the elements on page 447, we have

$$H = + 3^h 11.9^m$$

$$h_0 = H - \lambda = + 2^h 7.504^m$$

From DOWNES'S Table, pages 454 and 455, or from the formulæ on page 514, we find the correction to the Washington mean time of geocentric conjunction to be about $+ 57^m$, therefore the Washington mean time of apparent conjunction at the given place is Nov. 9^d 16^h 31^m.2; adding and subtracting 30^m, we shall have the approximate Washington mean times of immersion and emersion to be used in the computation, thus:

$$\tau_1 = + 0^h 27^m$$

$$\tau_2 = + 1^h 27^m$$

$$T + \tau_1 = \text{Nov. } 9^d 16^h 1.2^m$$

$$T + \tau_2 = \quad \quad 9^d 17^h 1.2^m$$

Washington Mean Time,	November	Immersion.			Emersion.		
		d	h	m	d	h	m
		9	16	1.2	17	1.2	
	h_0	+	2	7.504	+	2	7.504
	τ (in sidereal time)	+	0	27.074	+	1	27.238
	$h_0 + \tau$ (in arc)		38°	38' 40"		53°	41' 8"
	$\rho \cos \varphi'$			9.85425			9.85425
	$\sin (h_0 + \tau)$			9.79553			9.90621
	$\log \xi$			9.64978			9.76046
	ξ	+		0.44646	+		0.57605

Washington Mean Time,	November	Immersion.		Emersion.	
		9 ^d	16 ^h 1 ^m .2	17 ^h	1 ^m .2
	$\rho \sin \varphi'$		9.84314		9.84314
	$\cos d$		9.96143		9.96143
			9.80457		9.80457
	(1)	+	0.63763	+	0.63763
	$\rho \cos \varphi'$		9.85425		9.85425
	$\sin d$		9.60576		9.60576
	$\cos (h_0 + \tau)$		9.89267		9.77248
			9.35268		9.23249
	(2)	+	0.22526	+	0.17080
(1)-(2)	η	+	0.41237	+	0.46683
	const. log		9.41916		9.41916
	$\rho \cos \varphi' \cos (h_0 + \tau)$		9.74692		9.62673
	$\log \xi'$		9.16608		9.04589
	ξ'	+	0.14658	+	0.11115
	const. log		9.41916		9.41916
	$\xi \sin d$		9.25554		9.36622
	$\log \eta'$		8.67470		8.78538
	η'	+	0.04728	+	0.06101
	$\log x'$		9.73207		9.73207
	$\log \tau$		9.65321		0.16137
	$\log x$		9.38528		9.89344
	x	+	0.24282	+	0.78242
	$\log y'$		9.00689		9.00689
	$\log y' \tau$		8.66010		9.16826
	$y' \tau$	+	0.04572	+	0.14732
	Y	+	0.39490	+	0.39490
	y	+	0.44062	+	0.54242
	$x - \xi$	-	0.20364	+	0.20637
	$y - \eta$	+	0.02825	+	0.07539
	$x' - \xi'$	+	0.39302	+	0.42845
	$y' - \eta'$	+	0.05432	+	0.04059
	$m \sin M$		9.30886 n		9.31465
	$m \cos M$		8.45102		8.87731
	$\tan M$		0.85784 n		0.43734
	M	277°	53' 52"	69°	55' 56"
	$\sin M$		9.99586 n		9.97280
	$\log m$		9.31300		9.34185
	$n \sin N$		9.59441		9.63190
	$n \cos N$		8.73496		8.60842
	$\tan N$		0.85945		1.02348
	N	82°	7' 51"	84°	35' 17"
	$\sin N$		9.99589		9.99806
	$\log n$		9.59852		9.63384
	colog 60		8.22185		8.22185
	$\log n'$		7.82037		7.85569

Washington Mean Time,	November	Immersion.		Emersion.	
		9 ^d 16 ^h	1 ^m .2	17 ^h	1 ^m .2
	const. log	0.56500		0.56500	
	log m	9.31300		9.34185	
	$\sin (M - N)$	9.43413 n		9.40314 n	
	$\sin \psi$	9.31213 n		9.30999 n	
	ψ	-11° 50' 24"		-11° 46' 51"	
	$\log \frac{m}{n'}$	1.49263		1.48616	
	$\cos (M - N)$	9.98334 n		9.98563	
		1.47597 n		1.47179	
	$-\frac{m}{n'} \cos (M - N)$	+	$\frac{m}{n'}$ 29.921	-	$\frac{m}{n'}$ 29.634
	const. log	9.43500		9.43500	
	colog n'	2.17963		2.14431	
	$\cos \psi$	9.99066		9.99075	
		1.60529		1.57006	
	$\frac{[9.43500] \cos \psi}{n'}$	-	$\frac{m}{n'}$ 40.299	+	$\frac{m}{n'}$ 37.159
	t	-	10.378	+	7.525
	T	Nov. 9	$\frac{d}{h} \frac{m}{16} 1.200$	Nov. 17	$\frac{h}{m} 1.200$
Washington Mean Time of Phase,		Nov. 9	15 50.822	Nov. 17	8.725
	λ		1 4.396		1 4.396
Northfield Mean Time,		Nov. 9	14 46.426	Nov. 16	4.329
Angle of position:					
	N		82 7.8		84 35.3
	$\phi (+ 180^\circ)$	-	11 50.4	-	11 46.8
	P		93 58.2		252 48.5

from the north point of the moon's limb toward the east for direct image.

Prediction of Many Occultations for a Given Place.—When it is desired to predict all the occultations which will be visible at some one place, tables may be constructed and applied in such a way as to greatly diminish the labor of computation. In using such tables, the most convenient course will be to find for each occultation the hour-angle of the star at the moment of apparent conjunction in right ascension, as seen from the place of observation. The table of elements, pages 422—451, gives H , the Washington hour-angle at the moment of geocentric conjunction. The corresponding geocentric hour-angle at the place will be

$$h_0 = H - \lambda \quad (\lambda = \text{west longitude from Washington}).$$

The moment of apparent conjunction, as seen from the station, will be given by the condition $\xi = x$; or, using the values of ξ and x ,

$$\rho \cos \varphi' \sin h = x' \tau$$

h being the west hour-angle of the star at the moment in question, and τ the interval, in hours of mean time, which has elapsed since geocentric conjunction. We shall therefore have,

$$h = h_0 + \tau$$

for the hour-angle at the end of the interval τ after geocentric conjunction. In strictness, τ should here be multiplied by the factor $1 + \frac{1}{365.25}$, because the star moves a little more than 15° in an hour of mean time; but the error arising from the neglect of the factor is too small to be important, as it will affect the predicted time of conjunction by less than 10 seconds. The equation for finding τ is therefore,

$$\rho \cos \varphi' \sin (h_0 + \tau) = x' \tau$$

The quantities h_0 and x' being derived immediately from the data of the Ephemeris, the quantity τ is readily obtained by successive approximation, and may be tabulated as a function of h_0 and x' . The computation of τ is effected as follows. We have

$$\sin (h_0 + \tau) = \sin h_0 + 2 \sin \frac{1}{2} \tau \cos (h_0 + \frac{1}{2} \tau) \quad (1)$$

The value of τ in arc being seldom more than 24° we may put τ itself for $2 \sin \frac{1}{2} \tau$. The equation will then become

$$\rho \cos \varphi' \sin h_0 + \tau \rho \cos \varphi' \cos (h_0 + \frac{1}{2} \tau) = x' \tau$$

from which we find

$$\tau = \frac{\rho \cos \varphi' \sin h_0}{x' - \rho \cos \varphi' \cos (h_0 + \frac{1}{2} \tau)} \quad (2)$$

To tabulate τ , we must first have a table of the quantities

$$\begin{aligned} \xi &= \rho \cos \varphi' \sin h \\ \xi' &= [9.41916] \rho \cos \varphi' \cos h \end{aligned} \quad (3)$$

which table may be formed for every 10 minutes (in time) of h . If we then put ξ_0 for the value of ξ corresponding to $h = h_0$ and ξ'_1 for the value of ξ' corresponding to $h = h_0 + \frac{1}{2} \tau$, we shall have

$$\tau = \frac{\xi_0}{x' - \xi'_1} \quad (4)$$

Since we must know the value of τ , approximately, before we can take ξ'_1 from the table, this equation can be solved only by successive approximations. The approximations converge so rapidly as to offer no difficulty. It will be best to begin by comparing values of τ for the two extremes of x' , namely, $x' = 0.48$ and $x' = 0.60$, because the approximate values of τ can then be interpolated for all the intermediate values of x' . For the first approximation may be taken—

$$\begin{aligned} \frac{1}{2} \tau &= 50^m \sin \frac{4}{3} h_0 \quad (\text{for } x' = 0.48) \\ \frac{1}{2} \tau &= 40^m \sin \frac{4}{3} h_0 \quad (\text{for } x' = 0.60) \end{aligned} \quad (5)$$

or, the approximate values of τ may be taken from Mr. DOWNES's table, pages 454—455. It will be best to make the computation for every 30^m of h_0 , and to find the intermediate values of τ for every 10^m by interpolation. Then for each 30^m of h_0 we take ξ' from a table with the argument $h_0 + \frac{1}{2} \tau$, and log ξ with the argument h_0 , and thence compute τ by (4). If the value of τ thus arrived at differs more than 3^m from that employed in taking out ξ' , a new value may be used to correct ξ' , and the computation may be repeated. The values corresponding to $x' = 0.51$, $x' = 0.54$, and $x' = 0.57$, can then be computed with the single interpolation of approximate values of τ , and afterward the table can be extended by interpolation to every 0.01 of x' between $x' = 0.48$ and $x' = 0.60$. It will be best to compute τ in the first place to every 0.001 of an hour, and to drop the last figure in forming the definitive table. The table thus formed will be called *Table I*.

The values of η and η' may then be tabulated for every degree of the star's declination, and every 10^m of h . It is a mere question of convenience whether to compute the table for negative values of d , since by putting

$$\begin{aligned}\eta_1 &= \rho \sin \varphi' \cos d \\ \eta_2 &= -\rho \cos \varphi' \sin d \cos h\end{aligned}$$

η_1 may be given in a table of single-entry; and taking η_2 from the table of double-entry for a positive d , we shall have

$$\eta = \eta_1 \pm \eta_2$$

the lower sign being used for a negative d . But the extension of the table for η to negative values of d is so readily made that it will probably be found better to do it, so as to save taking out η_1 and η_2 separately.

This table for η will be called *Table II*, and the corresponding one for η' with the same arguments *Table III*. The precepts for using the tables will then be as follow:—

From *Table I* with the arguments x' and $H - \lambda = h_0$ take out the value of τ . It will be sufficient to use the nearest 0.01 of x' . τ will be of the same sign as h_0 . Then, enter *Table II* with the arguments d (the star's declination) and $h = h_0 + \tau$, and take out the value of η . Form the quantities $y = Y + y' \tau$, and $y - \eta$. If the latter quantity lies between the limits ± 0.28 , it is almost certain that there will be an occultation. If it falls without the limits ± 0.33 , it is almost certain that there will not be an occultation. A convenient rule to adopt will be—

$$\begin{aligned}y' < 0.10, \text{ limits} &= \pm 0.29 \\ 0.10 < y' < 0.15, \text{ limits} &= \pm 0.30 \\ 0.15 < y' < 0.20, \text{ limits} &= \pm 0.31 \\ 0.20 < y' \quad \text{limits} &= \pm 0.33\end{aligned}$$

Here, only the absolute value of y' is to be considered, without respect to its algebraic sign.

If $y - \eta$ falls between the limits thus indicated, take the values of ξ' and η' from the appropriate tables and compute v , Q and Δ from the equations

$$\begin{aligned}v \sin Q &= y' - \eta' \\ v \cos Q &= x' - \xi' \\ \Delta &= (y - \eta) \cos Q\end{aligned}$$

If $\Delta > 0.2723$ or $\log \Delta > 9.4350$ there will be no occultation, though the moon may graze the star when $\Delta = 0.2723$ is very small. If $\Delta < 0.2723$, compute

$$\begin{aligned}\tau_1 &= -\frac{y - \eta}{v} \sin Q & \cos P &= \frac{\Delta}{0.2723} \quad (P < 180^\circ) \\ \tau_2 &= \frac{0.2723 \sin P}{v}\end{aligned}$$

We shall then have—

$$\text{Local mean time of immersion, } T - \lambda + \tau + \tau_1 - \tau_2$$

$$\text{Local mean time of emersion, } T - \lambda + \tau + \tau_1 + \tau_2$$

$$\text{Position-angle from north toward east at immersion, } 180^\circ - Q - P$$

$$\text{Position-angle from north toward east at emersion, } 180^\circ - Q + P$$

In predicting the occultations for a given place, the first operation will be to go over the list of occultations in the Ephemeris, and select those which may be visible. The conditions of possible visibility are:—

1. The limiting parallels in the last columns must include the latitude of the place.

2. The quantity $H - \lambda$, taken without regard to sign, must be less than the semi-diurnal arc of the star by at least one hour. On very rare occasions an emersion might be seen in the east horizon, or an immersion in the west, when this difference is a few minutes less than an hour.

3. The sun must not be much more than an hour above the horizon at the local mean time $T - \lambda$, unless the star is bright enough to be seen in the day time.

The most convenient course will be to write the value of $-\lambda$ on the bottom of a sheet of paper, and passing through the list of occultations, pause over each one for which condition (1) is fulfilled, and examine whether conditions (2) and (3) are fulfilled. If either fails, the computer passes on. Very often it will require some examination to find whether $H - \lambda$ or $T - \lambda$ falls within the limits; in these cases, the computer may mark the occultation for trial and leave the decision for the subsequent operations. The whole list can be gone over in less than a day, and it will probably be found that about one-tenth of the occultations are marked for trial.

Phenomena of Planets and Satellites, pages 456—489.—These are, for the most part, sufficiently explained in the body of the work. The following additional explanations are added for completeness:—

Disks of Mercury and Venus, pages 456—457.—The angle θ , needed in reducing meridian observations, is the angle which the arc of the great circle from the planet to the sun, makes with the arc from the planet toward the west, reckoned in the direction west, north, east, south. This position-angle is reckoned from 0° to 360° , as in the measurement of double stars, the planet taking the place of the central star. But its measure is 90° greater than that of a double star.

We may also regard θ as expressing the angle which the line of cusps makes with the meridian, the positive direction of the meridian being toward the north, and the positive direction of the line of cusps that in which a person following this line would have the illuminated portion of the disk on his right.

Disk of Mars, page 458.—This page gives the apparent disk of the planet for every thirtieth day throughout the year.

Satellites of Jupiter, pages 459—483.—The times of phenomena are explained at the foot of each page; the diagram is on page 459.

Phenomena, pages 490—491.—The conjunctions, quadratures, and oppositions of the planets with respect to the sun, give the hours when the longitude of each planet differs from that of the sun by 0° , 90° , or 180° .

The conjunctions of the moon and planets with each other are given in right ascension. The degrees and minutes to the right show the difference of declination at the moment of conjunction.

Latitude by Observed Altitude of Polaris.—Table IV replaces the Tables A, B, C, D, given as a *Supplement* to the volumes of the Ephemeris for 1874—1881, and is intended for use at sea and reconnaissance on land. It will furnish an approximate value of the latitude, the probable error of which, in so far as the table is concerned, will be a few tenths of a minute of arc.

The directions for using the table are adapted to a right ascension of Polaris equal to $1^h 21^m.2$. Somewhat greater accuracy may be insured by substituting the right ascension of Polaris at the date of observation, from pages 302—313 of this volume.

APPENDIX.

ON THE CONSTRUCTION OF THE AMERICAN EPHEMERIS AND NAUTICAL ALMANAC FOR 1897.

IN the formulæ and numbers relating to the fixed stars, pages 280—292, the adopted constants of precession and aberration are those of STRUVE, and the nutation is that of PETERS, namely:

$$\text{Precession} = 50''.2411 + 0''.0002268 t$$

$$\text{Nutation} = 9''.2231 + 0''.000009 t$$

$$\text{Aberration} = 20''.4451$$

in which t is the number of years after 1800. These quantities have been used in all computations relating to the fixed stars.

The obliquity and nutation given on page 278 are derived from HANSEN'S *Tables du Soleil*. These numbers have been used in all the ephemerides of the sun, moon and planets.

HANSEN'S obliquity of the ecliptic is $0''.27$ greater than that of PETERS given in the issues of this Ephemeris before 1882.

A comparison of HANSEN'S mean obliquity with that of PETERS and of LE VERRIER at different epochs is given in the following table:—

Epoch.	HANSEN.			PETERS.	LE VERRIER.	H.—P.	H.—L.
	°	'	"	"	"	"	"
1750	23	28	18.19	17.44	19.42	+ 0.75	— 1.23
1800	23	27	54.80	54.22	55.63	+ 0.58	— 0.83
1850	23	27	31.42	30.99	31.83	+ 0.43	— 0.41
1900	23	27	8.02	7.76	8.03	+ 0.26	— 0.01

The formulæ for reducing the places of the fixed stars, page 280, correspond to the *Star Tables of the American Ephemeris*, Washington, 1869.

The mean right ascensions of stars have been reduced to NEWCOMB'S fundamental standard in the catalogue attached to the *Washington Observations for 1870*, Appendix II, with the following exceptions: The right ascensions of the 48 circumpolar stars north of 60° north declination are from Dr. GOULD'S *Standard Places of Fundamental Stars*, second edition, United States Coast Survey Office, 1866. Of the twelve stars south of 50° south declination, the positions of β Hydri, α Trianguli Australis, and σ Octantis, have been corrected from data furnished by Dr. GOULD; while the remaining nine are, as before, from the *British Nautical Almanac* for 1848.

The right ascensions of the additional stars in the general list, whose apparent right ascensions are given in a subsequent section, have been taken partly from the *Catalogue of 1098 Standard Clock and Zodiacal Stars*, forming Part IV of Vol. I of *Astronomical Papers Prepared for the Use of the American Ephemeris and Nautical Almanac*, Washington, 1881; and partly from the catalogue of the Astronomische Gesellschaft of 1878. A few have been derived from recent catalogues without a rigorous reduction for equinox.

The mean declinations of stars are taken from BOSS'S paper in the *Report of the Northern Boundary Commission*, Washington, 1879, for all stars found therein. The declinations of all the other stars have been reduced to the same standard, except those of the additional ones above, which have been taken partly from the Astronomische Gesellschaft list, and partly from places in recent catalogues. To the apparent places of Sirius and Procyon have been applied the periodic corrections resulting from AUWERS'S investigations.

The values of these corrections are :—

Year.	Sirius.		Procyon.	
1897.0	$\Delta \alpha = + 0.068$	$\Delta \delta = + 1.44$	$\Delta \alpha = + 0.068$	$\Delta \delta = - 0.24$
1898.0	$\Delta \alpha = + 0.044$	$\Delta \delta = + 1.44$	$\Delta \alpha = + 0.065$	$\Delta \delta = - 0.40$

The ephemeris of the sun is constructed from HANSEN and OLUFSEN's *Tables du Soleil*, Copenhagen, 1853, except that STRUVE's aberration has been used. This is equivalent to adding $0''.19$ to the true longitudes, but it does not affect the right ascensions and declinations. The sun's rectangular equatorial co-ordinates have been computed from the longitudes and latitudes by the following formulæ :—

$$\begin{aligned} X &= R \cos \lambda \\ Y &= R \sin \lambda \cos \omega - 19.3 R \beta \\ Z &= R \sin \lambda \sin \omega + 44.5 R \beta \end{aligned}$$

The reductions to mean equinox, 1897.0, are computed by the formulæ,

$$\begin{aligned} \Delta X' &= + Y \sec \omega \Delta \lambda \sin 1'' \\ \Delta Y' &= - X \cos \omega \Delta \lambda \sin 1'' + Z \Delta \omega \sin 1'' - 9.4 \tau R \sin (\lambda + 187^\circ) \\ \Delta Z' &= - X \sin \omega \Delta \lambda \sin 1'' - Y \Delta \omega \sin 1'' + 21.7 \tau R \sin (\lambda + 187^\circ) \end{aligned}$$

Where—

λ and β are the longitude and latitude of the sun referred to the equinox and ecliptic of the date;

ω , the obliquity of the ecliptic;

$\Delta \lambda$, the reduction of longitude for precession and nutation from January 0;

$\Delta \omega$, the reduction of the mean to the apparent obliquity;

τ , the fraction of the year since January 0.

The numerical coefficients are in units of the seventh place of decimals. The correction for latitude has been taken from GOETZE's paper in the *Astronomical Journal*, Vol. II, page 71.

The mean equatorial horizontal parallax of the sun, adopted from Professor NEWCOMB's *Investigation of the Distance of the Sun and the Elements which depend on it*,* is $8''.848$. The adopted semidiameter of the sun at the earth's mean distance is $16' 2''$. In the computations pertaining to eclipses, BESSEL's semidiameter, $15' 59''.788$ has been used.

The right ascension, declination and parallax of the moon are derived from HANSEN's *Tables de la Lune*, London, 1857, the mean longitude being corrected in accordance with NEWCOMB's *Researches on the Motion of the Moon*, Part I, page 268,† and a corrected table being substituted for Table XXXIV.

The semidiameter of the moon is computed from the moon's horizontal parallax by the formula,

$$S = 0.272274 \pi + 2''.5$$

The constant $2''.5$ is omitted in the computation of eclipses and occultations, as due entirely to telescopic and ocular irradiation.

The ephemeris of Mercury is derived from Professor WINLOCK's *Tables of Mercury*, Washington, 1864. They are based on the older theory of LE VERRIER, published in the *Additions to the Connaissance des Temps* for 1848.

The ephemeris of Venus is derived from Mr. G. W. HILL's *Tables of Venus*, Washington, 1872.

The ephemeris of Mars is derived from manuscript tables constructed from LINDENAU's Tables. Mr. HUGH BREEN's results, contained in his paper *On the Corrections of LINDENAU's Elements of Mars*, published in the *Memoirs of the Royal Astronomical Society*, Vol. XX, have also been discussed and applied; and LE VERRIER's secular variations of the elements are

* *Astronomical Observations made at the U. S. Naval Observatory, Washington, 1865, Appendix II.*

† *Astronomical Observations made at the U. S. Naval Observatory, Washington, 1875, Appendix II.*

likewise adopted. The perturbations produced by Jupiter have been numerically increased by $\frac{1}{10}$ of their value. The following are the corresponding corrected elements and annual variations for Washington, 1855.0:—

$$\begin{aligned} L &= 320 \text{ } 13 \text{ } 33.87 + 689101.1527 \text{ } t \\ \pi &= 333 \text{ } 23 \text{ } 17.84 + 65.9990 \text{ } t \\ \Omega &= 48 \text{ } 25 \text{ } 55.29 + 27.6997 \text{ } t \\ i &= 1 \text{ } 51 \text{ } 2.20 - 0.02141 \text{ } t \\ e &= 19238''.75 + 0.18549 \text{ } t \\ n &= 689050''.8927 \\ a &= 1.5236915 \end{aligned}$$

The ephemeris of Jupiter is derived from manuscript tables constructed from BOUVARD'S Tables, with such changes as were required to make them correspond more nearly to the formulæ.

The ephemeris of Saturn is derived from a provisional theory constructed by Mr. GEORGE W. HILL, and still unpublished.

The ephemerides of Uranus and Neptune are derived from Professor NEWCOMB'S Tables, published by the *Smithsonian Institution*.

The semidiameters of the planets are computed from the following values:—

	Semidiameter.	Log Dist.	Authority.
Mercury	3.34	0.00	LE VERRIER, <i>Theory of Mercury</i> .
Venus	8.546 \pm 0.086	0.00	
Mars	2.842 \pm 0.057	0.25	PEIRCE, from the Washington Observations of 1845 and 1846, made with the Mural Circle.
Jupiter (polar)	18.78 \pm 0.067	0.70	
Saturn (polar)	8.77 \pm 0.039	0.95	
Uranus	1.68 \pm 0.3	1.30	
Neptune	1.28	1.48	
Jupiter (equatorial)	20.00	0.70	
Saturn (equatorial)	9.38	0.95	

The elements of eclipses of the sun and occultations of stars by the moon are given in accordance with BESSEL'S method, using the special forms in CHAUVENET'S *Spherical and Practical Astronomy*. The constants adopted for the eclipses are:—

Sun's mean equatorial horizontal parallax	8.800
Semidiameter of the sun at distance unity, BESSEL . . .	959.788
Ratio of radius of moon to radius of earth, BURCKHARDT .	0.27227

The eclipses of Jupiter's satellites are computed from TODD'S *Continuation of DAMOISEAU'S Tables*, Washington, 1876. The occultations, transits, etc., are computed from WOOLHOUSE'S Tables, *British Nautical Almanac* for 1835, Table II of each satellite having been adapted to DAMOISEAU'S Tables.

The positions of the satellites of Saturn are computed from the elements and Tables of Professor HALL, except Hyperion, which is from EICHELBERGER'S elements.

The apparent elements of the rings of Saturn are computed from BESSEL'S data, except those for the dusky ring.

The elongations of the satellites of Uranus, and of the satellite of Neptune are computed from the data of Professor NEWCOMB'S *Uranian and Neptunian Systems*, Washington, 1875.

In compiling the positions of observatories, the latest available data have been used. The positions have been furnished, in many instances, through the courtesy of the directors of the Observatories, in response to a circular issued by the Superintendent of the American Ephemeris.

The reduction to geocentric latitude, and the logarithm of the radius of the earth, are derived from CLARKE's elements of the terrestrial spheroid, as adopted by the U. S. Coast and Geodetic Survey.

$$\log e = 8.9152503$$

$$\varphi' - \varphi = -11' 40''.43 \sin 2 \varphi + 1''.19 \sin 4 \varphi$$

$$\log \rho = 9.9992645 + 0.0007374 \cos 2 \varphi - 0.0000019 \cos 4 \varphi$$

Table IV, for finding the latitude from an observed altitude of Polaris, is constructed for—

- (1) An altitude of Polaris equal to 45° .
- (2) A declination of Polaris equal to $+88^\circ 45'.4$.

The principal computations of the Ephemeris have been distributed in the following manner:—

The ephemeris of the Sun was computed by Mrs. E. B. DAVIS; the Moon's longitude, latitude, semidiameter and horizontal parallax, by Professor KEITH; the right ascension and declination, by Professor VAN VLECK; the culminations, by Professor W. W. HENDRICKSON; the lunar distances, by Mr. BRADFORD; Mercury and Venus, by Mr. E. P. AUSTIN; Mars, Jupiter, Saturn, Uranus, and Neptune, by Mr. ROBERDEAU BUCHANAN; Jupiter's satellites, by Professor H. D. TODD; the satellites of Saturn, Uranus, and Neptune, by Mr. C. KEITH. The mean and apparent places of the fixed stars were prepared by Mr. HEDRICK and Miss E. A. HEDRICK; the general constants for their reduction, by Mr. BUCHANAN; the occultations, by Mr. AUHAGEN; and the eclipses were computed and the charts projected by Mr. BUCHANAN.

**CORRECTION REQUIRED, ON ACCOUNT OF SECOND DIFFERENCES OF THE MOON'S
MOTION, IN FINDING THE GREENWICH TIME CORRESPONDING
TO A CORRECTED LUNAR DISTANCE.**

Approximate Interval.		DIFFERENCE OF THE PROPORTIONAL LOGARITHMS IN THE EPHEMERIS.																									
		2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52
h	m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	10	2	50	0	0	0	1	1	1	1	1	1	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3
0	20	2	40	0	1	1	1	1	2	2	2	2	3	3	3	4	4	4	4	5	5	5	5	6	6	6	6
0	30	2	30	0	1	1	2	2	2	3	3	3	4	4	5	5	6	6	6	7	7	7	8	8	8	9	9
0	40	2	20	0	1	1	2	2	3	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11
0	50	2	10	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	12	13	13
1	0	2	0	1	1	2	2	3	3	4	4	5	6	6	7	7	8	8	9	9	10	10	11	12	13	14	14
1	10	1	50	1	1	2	2	3	4	4	5	6	6	7	8	8	9	9	10	10	11	12	12	13	14	15	15
1	20	1	40	1	1	2	3	3	4	4	5	6	7	7	8	9	9	10	10	11	12	13	14	14	15	16	16
1	30	1	30	1	1	2	3	4	4	5	6	6	7	8	8	9	10	10	11	12	13	14	15	15	16	16	16
		DIFFERENCE OF THE PROPORTIONAL LOGARITHMS IN THE EPHEMERIS.																									
		54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100		
h	m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	10	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	6	7	
0	20	7	7	7	7	8	8	8	8	9	9	9	9	10	10	10	10	11	11	11	11	12	12	12	12	12	
0	30	9	10	10	10	11	11	12	12	12	13	13	13	14	14	14	14	15	15	16	16	16	17	17	17	17	
0	40	12	12	13	13	13	14	14	15	15	16	16	16	17	17	18	18	19	19	19	20	20	21	21	21	22	
0	50	14	14	15	15	16	16	16	17	17	18	19	19	20	20	21	21	22	22	22	23	23	24	24	25	25	
1	0	15	16	16	17	17	18	18	19	19	20	21	21	22	22	23	23	24	24	25	25	26	27	27	28	28	
1	10	16	17	17	18	18	19	19	20	21	21	22	22	23	24	24	25	25	26	27	27	28	28	29	30	30	
1	20	17	17	18	19	19	20	20	21	21	22	23	23	24	25	25	26	26	27	28	28	29	29	30	31	31	
1	30	17	18	18	19	19	20	21	21	22	23	23	24	24	25	25	26	27	27	28	29	29	30	31	31	31	
		DIFFERENCE OF THE PROPORTIONAL LOGARITHMS IN THE EPHEMERIS.																									
		102	104	106	108	110	112	114	116	118	120	122	124	126	128	130	132	134	136	138	140	142	144	146	148	150	
h	m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	10	7	7	7	7	7	7	7	7	8	8	8	8	8	8	8	8	8	8	9	9	9	9	9	9	9	
0	20	13	13	13	13	14	14	14	14	15	15	15	15	15	15	15	16	16	16	16	16	17	17	17	17	17	
0	30	18	18	18	19	19	19	20	20	20	21	21	21	21	22	22	22	23	23	23	24	24	24	24	24	24	
0	40	22	22	23	23	24	24	25	25	25	26	26	26	27	27	27	28	28	28	29	29	29	30	30	30	30	
0	50	26	26	26	27	27	28	29	29	29	30	30	31	31	31	32	32	33	33	33	34	34	34	34	34	34	
1	0	28	29	29	30	30	31	31	32	33	33	34	34	35	35	36	36	37	37	37	38	38	38	38	38	38	
1	10	30	31	31	32	32	33	34	34	35	35	36	36	37	37	38	38	39	39	39	40	40	40	41	41	41	
1	20	31	32	33	33	34	34	35	35	36	36	37	38	38	39	39	40	40	41	41	41	42	42	42	42	42	
1	30	32	32	33	34	34	35	35	36	36	37	38	38	39	39	40	40	41	41	42	42	42	42	42	42	43	

The correction is to be added to the approximate Greenwich time when the proportional logarithms in the Ephemeris are decreasing, and subtracted when they are increasing.

TABLE II.—SIDEREAL INTO MEAN SOLAR TIME.

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.										
Side- real.	0 ^h .	1 ^h .	2 ^h .	3 ^h .	4 ^h .	5 ^h .	6 ^h .	7 ^h .	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	0 0.000	0 9.830	0 19.659	0 29.489	0 39.318	0 49.148	0 58.977	1 8.807	0	0.000
1	0 0.164	0 9.993	0 19.823	0 29.653	0 39.482	0 49.312	0 59.141	1 8.971	1	0.003
2	0 0.328	0 10.157	0 19.987	0 29.816	0 39.646	0 49.475	0 59.305	1 9.135	2	0.005
3	0 0.491	0 10.321	0 20.151	0 29.980	0 39.810	0 49.639	0 59.469	1 9.298	3	0.008
4	0 0.655	0 10.485	0 20.314	0 30.144	0 39.974	0 49.803	0 59.633	1 9.462	4	0.011
5	0 0.819	0 10.649	0 20.478	0 30.308	0 40.137	0 49.967	0 59.796	1 9.626	5	0.014
6	0 0.983	0 10.813	0 20.642	0 30.472	0 40.301	0 50.131	0 59.960	1 9.790	6	0.016
7	0 1.147	0 10.976	0 20.806	0 30.635	0 40.465	0 50.295	1 0.124	1 9.954	7	0.019
8	0 1.311	0 11.140	0 20.970	0 30.799	0 40.629	0 50.458	1 0.288	1 10.118	8	0.022
9	0 1.474	0 11.304	0 21.134	0 30.963	0 40.793	0 50.622	1 0.452	1 10.281	9	0.025
10	0 1.638	0 11.468	0 21.297	0 31.127	0 40.956	0 50.786	1 0.616	1 10.445	10	0.027
11	0 1.802	0 11.632	0 21.461	0 31.291	0 41.120	0 50.950	1 0.779	1 10.609	11	0.030
12	0 1.966	0 11.795	0 21.625	0 31.455	0 41.284	0 51.114	1 0.943	1 10.773	12	0.033
13	0 2.130	0 11.959	0 21.789	0 31.618	0 41.448	0 51.278	1 1.107	1 10.937	13	0.035
14	0 2.294	0 12.123	0 21.953	0 31.782	0 41.612	0 51.441	1 1.271	1 11.100	14	0.038
15	0 2.457	0 12.287	0 22.117	0 31.946	0 41.776	0 51.605	1 1.435	1 11.264	15	0.041
16	0 2.621	0 12.451	0 22.280	0 32.110	0 41.939	0 51.769	1 1.599	1 11.428	16	0.044
17	0 2.785	0 12.615	0 22.444	0 32.274	0 42.103	0 51.933	1 1.762	1 11.592	17	0.046
18	0 2.949	0 12.778	0 22.608	0 32.438	0 42.267	0 52.097	1 1.926	1 11.756	18	0.049
19	0 3.113	0 12.942	0 22.772	0 32.601	0 42.431	0 52.260	1 2.090	1 11.920	19	0.052
20	0 3.277	0 13.106	0 22.936	0 32.765	0 42.595	0 52.424	1 2.254	1 12.083	20	0.055
21	0 3.440	0 13.270	0 23.099	0 32.929	0 42.759	0 52.588	1 2.418	1 12.247	21	0.057
22	0 3.604	0 13.434	0 23.263	0 33.093	0 42.922	0 52.752	1 2.582	1 12.411	22	0.060
23	0 3.768	0 13.598	0 23.427	0 33.257	0 43.086	0 52.916	1 2.745	1 12.575	23	0.063
24	0 3.932	0 13.761	0 23.591	0 33.420	0 43.250	0 53.080	1 2.909	1 12.739	24	0.066
25	0 4.096	0 13.925	0 23.755	0 33.584	0 43.414	0 53.243	1 3.073	1 12.903	25	0.068
26	0 4.259	0 14.089	0 23.919	0 33.748	0 43.578	0 53.407	1 3.237	1 13.066	26	0.071
27	0 4.423	0 14.253	0 24.082	0 33.912	0 43.742	0 53.571	1 3.401	1 13.230	27	0.074
28	0 4.587	0 14.417	0 24.246	0 34.076	0 43.905	0 53.735	1 3.564	1 13.394	28	0.076
29	0 4.751	0 14.581	0 24.410	0 34.240	0 44.069	0 53.899	1 3.728	1 13.558	29	0.079
30	0 4.915	0 14.744	0 24.574	0 34.403	0 44.233	0 54.063	1 3.892	1 13.722	30	0.082
31	0 5.079	0 14.908	0 24.738	0 34.567	0 44.397	0 54.226	1 4.056	1 13.886	31	0.085
32	0 5.242	0 15.072	0 24.902	0 34.731	0 44.561	0 54.390	1 4.220	1 14.049	32	0.087
33	0 5.406	0 15.236	0 25.065	0 34.895	0 44.724	0 54.554	1 4.384	1 14.213	33	0.090
34	0 5.570	0 15.400	0 25.229	0 35.059	0 44.888	0 54.718	1 4.547	1 14.377	34	0.093
35	0 5.734	0 15.563	0 25.393	0 35.223	0 45.052	0 54.882	1 4.711	1 14.541	35	0.096
36	0 5.898	0 15.727	0 25.557	0 35.386	0 45.216	0 55.046	1 4.875	1 14.705	36	0.098
37	0 6.062	0 15.891	0 25.721	0 35.550	0 45.380	0 55.209	1 5.039	1 14.868	37	0.101
38	0 6.225	0 16.055	0 25.885	0 35.714	0 45.544	0 55.373	1 5.203	1 15.032	38	0.104
39	0 6.389	0 16.219	0 26.048	0 35.878	0 45.707	0 55.537	1 5.367	1 15.196	39	0.106
40	0 6.553	0 16.383	0 26.212	0 36.042	0 45.871	0 55.701	1 5.530	1 15.360	40	0.109
41	0 6.717	0 16.546	0 26.376	0 36.206	0 46.035	0 55.865	1 5.694	1 15.524	41	0.112
42	0 6.881	0 16.710	0 26.540	0 36.369	0 46.199	0 56.028	1 5.858	1 15.688	42	0.115
43	0 7.045	0 16.874	0 26.704	0 36.533	0 46.363	0 56.192	1 6.022	1 15.851	43	0.117
44	0 7.208	0 17.038	0 26.867	0 36.697	0 46.527	0 56.356	1 6.186	1 16.015	44	0.120
45	0 7.372	0 17.202	0 27.031	0 36.861	0 46.690	0 56.520	1 6.350	1 16.179	45	0.123
46	0 7.536	0 17.366	0 27.195	0 37.025	0 46.854	0 56.684	1 6.513	1 16.343	46	0.126
47	0 7.700	0 17.529	0 27.359	0 37.188	0 47.018	0 56.848	1 6.677	1 16.507	47	0.128
48	0 7.864	0 17.693	0 27.523	0 37.352	0 47.182	0 57.011	1 6.841	1 16.671	48	0.131
49	0 8.027	0 17.857	0 27.687	0 37.516	0 47.346	0 57.175	1 7.005	1 16.834	49	0.134
50	0 8.191	0 18.021	0 27.850	0 37.680	0 47.510	0 57.339	1 7.169	1 16.998	50	0.137
51	0 8.355	0 18.185	0 28.014	0 37.844	0 47.673	0 57.503	1 7.332	1 17.162	51	0.139
52	0 8.519	0 18.349	0 28.178	0 38.008	0 47.837	0 57.667	1 7.496	1 17.326	52	0.142
53	0 8.683	0 18.512	0 28.342	0 38.171	0 48.001	0 57.831	1 7.660	1 17.490	53	0.145
54	0 8.847	0 18.676	0 28.506	0 38.335	0 48.165	0 57.994	1 7.824	1 17.654	54	0.147
55	0 9.010	0 18.840	0 28.670	0 38.499	0 48.329	0 58.158	1 7.988	1 17.817	55	0.150
56	0 9.174	0 19.004	0 28.833	0 38.663	0 48.492	0 58.322	1 8.152	1 17.981	56	0.153
57	0 9.338	0 19.168	0 28.997	0 38.827	0 48.656	0 58.486	1 8.315	1 18.145	57	0.156
58	0 9.502	0 19.331	0 29.161	0 38.991	0 48.820	0 58.650	1 8.479	1 18.309	58	0.158
59	0 9.666	0 19.495	0 29.325	0 39.154	0 48.984	0 58.814	1 8.643	1 18.473	59	0.161
Side- real.	0 ^h .	1 ^h .	2 ^h .	3 ^h .	4 ^h .	5 ^h .	6 ^h .	7 ^h .	For Seconds.	

TABLE II.—SIDEREAL INTO MEAN SOLAR TIME.

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TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.

Sidereal	8 ^h .	9 ^h .	10 ^h .	11 ^h .	12 ^h .	13 ^h .	14 ^h .	15 ^h .	For Seconds.
m	m s	m s	m s	m s	m s	m s	m s	m s	s s
0	18.636	28.466	38.296	48.125	57.955	7.784	17.614	27.443	0.000
1	18.800	28.630	38.459	48.289	58.119	7.948	17.778	27.607	0.003
2	18.964	28.794	38.623	48.453	58.282	8.112	17.941	27.771	0.005
3	19.128	28.958	38.787	48.617	58.446	8.276	18.105	27.935	0.008
4	19.292	29.121	38.951	48.780	58.610	8.440	18.269	28.099	0.011
5	19.456	29.285	39.115	48.944	58.774	8.603	18.433	28.263	0.014
6	19.619	29.449	39.279	49.108	58.938	8.767	18.597	28.426	0.016
7	19.783	29.613	39.442	49.272	59.101	8.931	18.761	28.590	0.019
8	19.947	29.777	39.606	49.436	59.265	9.095	18.924	28.754	0.022
9	20.111	29.940	39.770	49.600	59.429	9.259	19.088	28.918	0.025
10	20.275	30.104	39.934	49.763	59.593	9.423	19.252	29.082	0.027
11	20.439	30.268	40.098	49.927	59.757	9.586	19.416	29.245	0.030
12	20.602	30.432	40.261	50.091	59.921	9.750	19.580	29.409	0.033
13	20.766	30.596	40.425	50.255	2.084	9.914	19.744	29.573	0.035
14	20.930	30.760	40.589	50.419	2.248	10.078	19.907	29.737	0.038
15	21.094	30.923	40.753	50.583	2.412	10.242	20.071	29.901	0.041
16	21.258	31.087	40.917	50.746	2.576	10.405	20.235	30.065	0.044
17	21.422	31.251	41.081	50.910	2.740	10.569	20.399	30.228	0.046
18	21.585	31.415	41.244	51.074	2.904	10.733	20.563	30.392	0.049
19	21.749	31.579	41.408	51.238	2.1.067	10.897	20.727	30.556	0.052
20	21.913	31.743	41.572	51.402	2.1.231	11.061	20.890	30.720	0.055
21	22.077	31.906	41.736	51.565	2.1.395	11.225	21.054	30.884	0.057
22	22.241	32.070	41.900	51.729	2.1.559	11.388	21.218	31.048	0.060
23	22.404	32.234	42.064	51.893	2.1.723	11.552	21.382	31.211	0.063
24	22.568	32.398	42.227	52.057	2.1.887	11.716	21.546	31.375	0.066
25	22.732	32.562	42.391	52.221	2.2.050	11.880	21.709	31.539	0.068
26	22.896	32.726	42.555	52.385	2.2.214	12.044	21.873	31.703	0.071
27	23.060	32.889	42.719	52.548	2.2.378	12.208	22.037	31.867	0.074
28	23.224	33.053	42.883	52.712	2.2.542	12.371	22.201	32.031	0.076
29	23.387	33.217	43.047	52.876	2.2.706	12.535	22.365	32.194	0.079
30	23.551	33.381	43.210	53.040	2.2.869	12.699	22.529	32.358	0.082
31	23.715	33.545	43.374	53.204	2.3.033	12.863	22.692	32.522	0.085
32	23.879	33.708	43.538	53.368	2.3.197	13.027	22.856	32.686	0.087
33	24.043	33.872	43.702	53.531	2.3.361	13.191	23.020	32.850	0.090
34	24.207	34.036	43.866	53.695	2.3.525	13.354	23.184	33.013	0.093
35	24.370	34.200	44.029	53.859	2.3.689	13.518	23.348	33.177	0.096
36	24.534	34.364	44.193	54.023	2.3.852	13.682	23.512	33.341	0.098
37	24.698	34.528	44.357	54.187	2.4.016	13.846	23.675	33.505	0.101
38	24.862	34.691	44.521	54.351	2.4.180	14.010	23.839	33.669	0.104
39	25.026	34.855	44.685	54.514	2.4.344	14.173	24.003	33.833	0.106
40	25.190	35.019	44.849	54.678	2.4.508	14.337	24.167	33.996	0.109
41	25.353	35.183	45.012	54.842	2.4.672	14.501	24.331	34.160	0.112
42	25.517	35.347	45.176	55.006	2.4.835	14.665	24.495	34.324	0.115
43	25.681	35.511	45.340	55.170	2.4.999	14.829	24.658	34.488	0.117
44	25.845	35.674	45.504	55.333	2.5.163	14.993	24.822	34.652	0.120
45	26.009	35.838	45.668	55.497	2.5.327	15.156	24.986	34.816	0.123
46	26.172	36.002	45.832	55.661	2.5.491	15.320	25.150	34.979	0.126
47	26.336	36.166	45.995	55.825	2.5.655	15.484	25.314	35.143	0.128
48	26.500	36.330	46.159	55.989	2.5.818	15.648	25.477	35.307	0.131
49	26.664	36.493	46.323	56.153	2.5.982	15.812	25.641	35.471	0.134
50	26.828	36.657	46.487	56.316	2.6.146	15.976	25.805	35.635	0.137
51	26.992	36.821	46.651	56.480	2.6.310	16.139	25.969	35.798	0.139
52	27.155	36.985	46.815	56.644	2.6.474	16.303	26.133	35.962	0.142
53	27.319	37.149	46.978	56.808	2.6.637	16.467	26.297	36.126	0.145
54	27.483	37.313	47.142	56.972	2.6.801	16.631	26.460	36.290	0.147
55	27.647	37.476	47.306	57.136	2.6.965	16.795	26.624	36.454	0.150
56	27.811	37.640	47.470	57.299	2.7.129	16.959	26.788	36.618	0.153
57	27.975	37.804	47.634	57.463	2.7.293	17.122	26.952	36.781	0.156
58	28.138	37.968	47.797	57.627	2.7.457	17.286	27.116	36.945	0.158
59	28.302	38.132	47.961	57.791	2.7.620	17.450	27.280	37.109	0.161
Sidereal	8 ^h .	9 ^h .	10 ^h .	11 ^h .	12 ^h .	13 ^h .	14 ^h .	15 ^h .	For Seconds.

TABLE II.—SIDEREAL INTO MEAN SOLAR TIME.

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.										
Side- real.	16 ^h .	17 ^h .	18 ^h .	19 ^h .	20 ^h .	21 ^h .	22 ^h .	23 ^h .	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	2 37.273	2 47.102	2 56.932	3 6.762	3 16.591	3 26.421	3 36.250	3 46.080	0	0.000
1	2 37.437	2 47.266	2 57.096	3 6.925	3 16.755	3 26.585	3 36.414	3 46.244	1	0.003
2	2 37.601	2 47.430	2 57.260	3 7.089	3 16.919	3 26.748	3 36.578	3 46.407	2	0.005
3	2 37.764	2 47.594	2 57.424	3 7.253	3 17.083	3 26.912	3 36.742	3 46.571	3	0.008
4	2 37.928	2 47.758	2 57.587	3 7.417	3 17.246	3 27.076	3 36.906	3 46.735	4	0.011
5	2 38.092	2 47.922	2 57.751	3 7.581	3 17.410	3 27.240	3 37.069	3 46.899	5	0.014
6	2 38.256	2 48.085	2 57.915	3 7.745	3 17.574	3 27.404	3 37.233	3 47.063	6	0.016
7	2 38.420	2 48.249	2 58.079	3 7.908	3 17.738	3 27.568	3 37.397	3 47.227	7	0.019
8	2 38.584	2 48.413	2 58.243	3 8.072	3 17.902	3 27.731	3 37.561	3 47.390	8	0.022
9	2 38.747	2 48.577	2 58.406	3 8.236	3 18.066	3 27.895	3 37.725	3 47.554	9	0.025
10	2 38.911	2 48.741	2 58.570	3 8.400	3 18.229	3 28.059	3 37.889	3 47.718	10	0.027
11	2 39.075	2 48.905	2 58.734	3 8.564	3 18.393	3 28.223	3 38.052	3 47.882	11	0.030
12	2 39.239	2 49.068	2 58.898	3 8.728	3 18.557	3 28.387	3 38.216	3 48.046	12	0.033
13	2 39.403	2 49.232	2 59.062	3 8.891	3 18.721	3 28.550	3 38.380	3 48.210	13	0.035
14	2 39.566	2 49.396	2 59.226	3 9.055	3 18.885	3 28.714	3 38.544	3 48.373	14	0.038
15	2 39.730	2 49.560	2 59.389	3 9.219	3 19.049	3 28.878	3 38.708	3 48.537	15	0.041
16	2 39.894	2 49.724	2 59.553	3 9.383	3 19.212	3 29.042	3 38.871	3 48.701	16	0.044
17	2 40.058	2 49.888	2 59.717	3 9.547	3 19.376	3 29.206	3 39.035	3 48.865	17	0.046
18	2 40.222	2 50.051	2 59.881	3 9.710	3 19.540	3 29.370	3 39.199	3 49.029	18	0.049
19	2 40.386	2 50.215	3 0.045	3 9.874	3 19.704	3 29.533	3 39.363	3 49.193	19	0.052
20	2 40.549	2 50.379	3 0.209	3 10.038	3 19.868	3 29.697	3 39.527	3 49.356	20	0.055
21	2 40.713	2 50.543	3 0.372	3 10.202	3 20.032	3 29.861	3 39.691	3 49.520	21	0.057
22	2 40.877	2 50.707	3 0.536	3 10.366	3 20.195	3 30.025	3 39.854	3 49.684	22	0.060
23	2 41.041	2 50.870	3 0.700	3 10.530	3 20.359	3 30.189	3 40.018	3 49.848	23	0.063
24	2 41.205	2 51.034	3 0.864	3 10.693	3 20.523	3 30.353	3 40.182	3 50.012	24	0.066
25	2 41.369	2 51.198	3 1.028	3 10.857	3 20.687	3 30.516	3 40.346	3 50.175	25	0.068
26	2 41.532	2 51.362	3 1.192	3 11.021	3 20.851	3 30.680	3 40.510	3 50.339	26	0.071
27	2 41.696	2 51.526	3 1.355	3 11.185	3 21.014	3 30.844	3 40.674	3 50.503	27	0.074
28	2 41.860	2 51.690	3 1.519	3 11.349	3 21.178	3 31.008	3 40.837	3 50.667	28	0.076
29	2 42.024	2 51.853	3 1.683	3 11.513	3 21.342	3 31.172	3 41.001	3 50.831	29	0.079
30	2 42.188	2 52.017	3 1.847	3 11.676	3 21.506	3 31.336	3 41.165	3 50.995	30	0.082
31	2 42.352	2 52.181	3 2.011	3 11.840	3 21.670	3 31.499	3 41.329	3 51.158	31	0.085
32	2 42.515	2 52.345	3 2.174	3 12.004	3 21.834	3 31.663	3 41.493	3 51.322	32	0.087
33	2 42.679	2 52.509	3 2.338	3 12.168	3 21.997	3 31.827	3 41.657	3 51.486	33	0.090
34	2 42.843	2 52.673	3 2.502	3 12.332	3 22.161	3 31.991	3 41.820	3 51.650	34	0.093
35	2 43.007	2 52.836	3 2.666	3 12.496	3 22.325	3 32.155	3 41.984	3 51.814	35	0.096
36	2 43.171	2 53.000	3 2.830	3 12.659	3 22.489	3 32.318	3 42.148	3 51.978	36	0.098
37	2 43.334	2 53.164	3 2.994	3 12.823	3 22.653	3 32.482	3 42.312	3 52.141	37	0.101
38	2 43.498	2 53.328	3 3.157	3 12.987	3 22.817	3 32.646	3 42.476	3 52.305	38	0.104
39	2 43.662	2 53.492	3 3.321	3 13.151	3 22.980	3 32.810	3 42.639	3 52.469	39	0.106
40	2 43.826	2 53.656	3 3.485	3 13.315	3 23.144	3 32.974	3 42.803	3 52.633	40	0.109
41	2 43.990	2 53.819	3 3.649	3 13.478	3 23.308	3 33.138	3 42.967	3 52.797	41	0.112
42	2 44.154	2 53.983	3 3.813	3 13.642	3 23.472	3 33.301	3 43.131	3 52.961	42	0.115
43	2 44.317	2 54.147	3 3.977	3 13.806	3 23.636	3 33.465	3 43.295	3 53.124	43	0.117
44	2 44.481	2 54.311	3 4.140	3 13.970	3 23.800	3 33.629	3 43.459	3 53.288	44	0.120
45	2 44.645	2 54.475	3 4.304	3 14.134	3 23.963	3 33.793	3 43.622	3 53.452	45	0.123
46	2 44.809	2 54.638	3 4.468	3 14.298	3 24.127	3 33.957	3 43.786	3 53.616	46	0.126
47	2 44.973	2 54.802	3 4.632	3 14.461	3 24.291	3 34.121	3 43.950	3 53.780	47	0.128
48	2 45.137	2 54.966	3 4.796	3 14.625	3 24.455	3 34.284	3 44.114	3 53.943	48	0.131
49	2 45.300	2 55.130	3 4.960	3 14.789	3 24.619	3 34.448	3 44.278	3 54.107	49	0.134
50	2 45.464	2 55.294	3 5.123	3 14.953	3 24.782	3 34.612	3 44.442	3 54.271	50	0.137
51	2 45.628	2 55.458	3 5.287	3 15.117	3 24.946	3 34.776	3 44.605	3 54.435	51	0.139
52	2 45.792	2 55.621	3 5.451	3 15.281	3 25.110	3 34.940	3 44.769	3 54.599	52	0.142
53	2 45.956	2 55.785	3 5.615	3 15.444	3 25.274	3 35.104	3 44.933	3 54.763	53	0.145
54	2 46.120	2 55.949	3 5.779	3 15.608	3 25.438	3 35.267	3 45.097	3 54.926	54	0.147
55	2 46.283	2 56.113	3 5.942	3 15.772	3 25.602	3 35.431	3 45.261	3 55.090	55	0.150
56	2 46.447	2 56.277	3 6.106	3 15.936	3 25.765	3 35.595	3 45.425	3 55.254	56	0.153
57	2 46.611	2 56.441	3 6.270	3 16.100	3 25.929	3 35.759	3 45.588	3 55.418	57	0.156
58	2 46.775	2 56.604	3 6.434	3 16.264	3 26.093	3 35.923	3 45.752	3 55.582	58	0.158
59	2 46.939	2 56.768	3 6.598	3 16.427	3 26.257	3 36.086	3 45.916	3 55.746	59	0.161
Side- real.	16 ^h .	17 ^h .	18 ^h .	19 ^h .	20 ^h .	21 ^h .	22 ^h .	23 ^h .	For Seconds.	

TABLE III.—MEAN SOLAR INTO SIDEREAL TIME.

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TO BE ADDED TO A MEAN TIME INTERVAL.										
Mean Solar.	0 ^h .	1 ^h .	2 ^h .	3 ^h .	4 ^h .	5 ^h .	6 ^h .	7 ^h .	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	0 0.000	0 9.856	0 19.713	0 29.569	0 39.426	0 49.282	0 59.139	1 8.995	0	0.000
1	0 0.164	0 10.021	0 19.877	0 29.734	0 39.590	0 49.447	0 59.303	1 9.160	1	0.003
2	0 0.329	0 10.185	0 20.041	0 29.898	0 39.754	0 49.611	0 59.467	1 9.324	2	0.005
3	0 0.493	0 10.349	0 20.206	0 30.062	0 39.919	0 49.775	0 59.632	1 9.488	3	0.008
4	0 0.657	0 10.514	0 20.370	0 30.227	0 40.083	0 49.939	0 59.796	1 9.652	4	0.011
5	0 0.821	0 10.678	0 20.534	0 30.391	0 40.247	0 50.104	0 59.960	1 9.817	5	0.014
6	0 0.986	0 10.842	0 20.699	0 30.555	0 40.412	0 50.268	1 0.124	1 9.981	6	0.016
7	0 1.150	0 11.006	0 20.863	0 30.719	0 40.576	0 50.432	1 0.289	1 10.145	7	0.019
8	0 1.314	0 11.171	0 21.027	0 30.884	0 40.740	0 50.597	1 0.453	1 10.310	8	0.022
9	0 1.478	0 11.335	0 21.191	0 31.048	0 40.904	0 50.761	1 0.617	1 10.474	9	0.025
10	0 1.643	0 11.499	0 21.356	0 31.212	0 41.069	0 50.925	1 0.782	1 10.638	10	0.027
11	0 1.807	0 11.663	0 21.520	0 31.376	0 41.233	0 51.089	1 0.946	1 10.802	11	0.030
12	0 1.971	0 11.828	0 21.684	0 31.541	0 41.397	0 51.254	1 1.110	1 10.967	12	0.033
13	0 2.136	0 11.992	0 21.849	0 31.705	0 41.561	0 51.418	1 1.274	1 11.131	13	0.036
14	0 2.300	0 12.156	0 22.013	0 31.869	0 41.726	0 51.582	1 1.439	1 11.295	14	0.038
15	0 2.464	0 12.321	0 22.177	0 32.034	0 41.890	0 51.746	1 1.603	1 11.459	15	0.041
16	0 2.628	0 12.485	0 22.341	0 32.198	0 42.054	0 51.911	1 1.767	1 11.624	16	0.044
17	0 2.793	0 12.649	0 22.506	0 32.362	0 42.219	0 52.075	1 1.932	1 11.788	17	0.047
18	0 2.957	0 12.813	0 22.670	0 32.526	0 42.383	0 52.239	1 2.096	1 11.952	18	0.049
19	0 3.121	0 12.978	0 22.834	0 32.691	0 42.547	0 52.404	1 2.260	1 12.117	19	0.052
20	0 3.285	0 13.142	0 22.998	0 32.855	0 42.711	0 52.568	1 2.424	1 12.281	20	0.055
21	0 3.450	0 13.306	0 23.163	0 33.019	0 42.876	0 52.732	1 2.589	1 12.445	21	0.057
22	0 3.614	0 13.471	0 23.327	0 33.183	0 43.040	0 52.896	1 2.753	1 12.609	22	0.060
23	0 3.778	0 13.635	0 23.491	0 33.348	0 43.204	0 53.061	1 2.917	1 12.774	23	0.063
24	0 3.943	0 13.799	0 23.656	0 33.512	0 43.368	0 53.225	1 3.081	1 12.938	24	0.066
25	0 4.107	0 13.963	0 23.820	0 33.676	0 43.533	0 53.389	1 3.246	1 13.102	25	0.068
26	0 4.271	0 14.128	0 23.984	0 33.841	0 43.697	0 53.554	1 3.410	1 13.266	26	0.071
27	0 4.435	0 14.292	0 24.148	0 34.005	0 43.861	0 53.718	1 3.574	1 13.431	27	0.074
28	0 4.600	0 14.456	0 24.313	0 34.169	0 44.026	0 53.882	1 3.739	1 13.595	28	0.077
29	0 4.764	0 14.620	0 24.477	0 34.333	0 44.190	0 54.046	1 3.903	1 13.759	29	0.079
30	0 4.928	0 14.785	0 24.641	0 34.498	0 44.354	0 54.211	1 4.067	1 13.924	30	0.082
31	0 5.093	0 14.949	0 24.805	0 34.662	0 44.518	0 54.375	1 4.231	1 14.088	31	0.085
32	0 5.257	0 15.113	0 24.970	0 34.826	0 44.683	0 54.539	1 4.396	1 14.252	32	0.088
33	0 5.421	0 15.278	0 25.134	0 34.990	0 44.847	0 54.703	1 4.560	1 14.416	33	0.090
34	0 5.585	0 15.442	0 25.298	0 35.155	0 45.011	0 54.868	1 4.724	1 14.581	34	0.093
35	0 5.750	0 15.606	0 25.463	0 35.319	0 45.176	0 55.032	1 4.888	1 14.745	35	0.096
36	0 5.914	0 15.770	0 25.627	0 35.483	0 45.340	0 55.196	1 5.053	1 14.909	36	0.099
37	0 6.078	0 15.935	0 25.791	0 35.648	0 45.504	0 55.361	1 5.217	1 15.073	37	0.101
38	0 6.242	0 16.099	0 25.955	0 35.812	0 45.668	0 55.525	1 5.381	1 15.238	38	0.104
39	0 6.407	0 16.263	0 26.120	0 35.976	0 45.833	0 55.689	1 5.546	1 15.402	39	0.107
40	0 6.571	0 16.427	0 26.284	0 36.140	0 45.997	0 55.853	1 5.710	1 15.566	40	0.110
41	0 6.735	0 16.592	0 26.448	0 36.305	0 46.161	0 56.018	1 5.874	1 15.731	41	0.112
42	0 6.900	0 16.756	0 26.612	0 36.469	0 46.325	0 56.182	1 6.038	1 15.895	42	0.115
43	0 7.064	0 16.920	0 26.777	0 36.633	0 46.490	0 56.346	1 6.203	1 16.059	43	0.118
44	0 7.228	0 17.085	0 26.941	0 36.798	0 46.654	0 56.510	1 6.367	1 16.223	44	0.120
45	0 7.392	0 17.249	0 27.105	0 36.962	0 46.818	0 56.675	1 6.531	1 16.388	45	0.123
46	0 7.557	0 17.413	0 27.270	0 37.126	0 46.983	0 56.839	1 6.695	1 16.552	46	0.126
47	0 7.721	0 17.577	0 27.434	0 37.290	0 47.147	0 57.003	1 6.860	1 16.716	47	0.129
48	0 7.885	0 17.742	0 27.598	0 37.455	0 47.311	0 57.168	1 7.024	1 16.881	48	0.131
49	0 8.049	0 17.906	0 27.762	0 37.619	0 47.475	0 57.332	1 7.188	1 17.045	49	0.134
50	0 8.214	0 18.070	0 27.927	0 37.783	0 47.640	0 57.496	1 7.353	1 17.209	50	0.137
51	0 8.378	0 18.234	0 28.091	0 37.947	0 47.804	0 57.660	1 7.517	1 17.373	51	0.140
52	0 8.542	0 18.399	0 28.255	0 38.112	0 47.968	0 57.825	1 7.681	1 17.538	52	0.142
53	0 8.707	0 18.563	0 28.420	0 38.276	0 48.132	0 57.989	1 7.845	1 17.702	53	0.145
54	0 8.871	0 18.727	0 28.584	0 38.440	0 48.297	0 58.153	1 8.010	1 17.866	54	0.148
55	0 9.035	0 18.892	0 28.748	0 38.605	0 48.461	0 58.317	1 8.174	1 18.030	55	0.151
56	0 9.199	0 19.056	0 28.912	0 38.769	0 48.625	0 58.482	1 8.338	1 18.195	56	0.153
57	0 9.364	0 19.220	0 29.077	0 38.933	0 48.790	0 58.646	1 8.502	1 18.359	57	0.156
58	0 9.528	0 19.384	0 29.241	0 39.097	0 48.954	0 58.810	1 8.667	1 18.523	58	0.159
59	0 9.692	0 19.549	0 29.405	0 39.262	0 49.118	0 58.975	1 8.831	1 18.688	59	0.162
Mean Solar.	0 ^h .	1 ^h .	2 ^h .	3 ^h .	4 ^h .	5 ^h .	6 ^h .	7 ^h .	For Seconds.	

TABLE III.—MEAN SOLAR INTO SIDEREAL TIME.

TO BE ADDED TO A MEAN TIME INTERVAL.									
Mean Solar.	8 ^h .	9 ^h .	10 ^h .	11 ^h .	12 ^h .	13 ^h .	14 ^h .	15 ^h .	For Seconds.
m	m s	m s	m s	m s	m s	m s	m s	m s	s s
0	18.852	28.708	38.565	48.421	58.278	8.134	17.991	27.847	0 0.000
1	19.016	28.873	38.729	48.585	58.442	8.298	18.155	28.011	1 0.003
2	19.180	29.037	38.893	48.750	58.606	8.463	18.319	28.176	2 0.005
3	19.345	29.201	39.058	48.914	58.771	8.627	18.483	28.340	3 0.008
4	19.509	29.365	39.222	49.078	58.935	8.791	18.648	28.504	4 0.011
5	19.673	29.530	39.386	49.243	59.099	8.956	18.812	28.668	5 0.014
6	19.837	29.694	39.550	49.407	59.263	9.120	18.976	28.833	6 0.016
7	20.002	29.858	39.715	49.571	59.428	9.284	19.141	28.997	7 0.019
8	20.166	30.022	39.879	49.735	59.592	9.448	19.305	29.161	8 0.022
9	20.330	30.187	40.043	49.900	59.756	9.613	19.469	29.326	9 0.025
10	20.495	30.351	40.207	50.064	59.920	9.777	19.633	29.490	10 0.027
11	20.659	30.515	40.372	50.228	60.085	9.941	19.798	29.654	11 0.030
12	20.823	30.680	40.536	50.393	60.249	10.105	19.962	29.818	12 0.033
13	20.987	30.844	40.700	50.557	60.413	10.270	20.126	29.983	13 0.036
14	21.152	31.008	40.865	50.721	60.578	10.434	20.290	30.147	14 0.038
15	21.316	31.172	41.029	50.885	60.742	10.598	20.455	30.311	15 0.041
16	21.480	31.337	41.193	51.050	60.906	10.763	20.619	30.476	16 0.044
17	21.644	31.501	41.357	51.214	61.070	10.927	20.783	30.640	17 0.047
18	21.809	31.665	41.522	51.378	61.235	11.091	20.948	30.804	18 0.049
19	21.973	31.829	41.686	51.542	61.399	11.255	21.112	30.968	19 0.052
20	22.137	31.994	41.850	51.707	61.563	11.420	21.276	31.133	20 0.055
21	22.302	32.158	42.015	51.871	61.727	11.584	21.440	31.297	21 0.057
22	22.466	32.322	42.179	52.035	61.892	11.748	21.605	31.461	22 0.060
23	22.630	32.487	42.343	52.200	62.056	11.912	21.769	31.625	23 0.063
24	22.794	32.651	42.507	52.364	62.220	12.077	21.933	31.790	24 0.066
25	22.959	32.815	42.672	52.528	62.385	12.241	22.098	31.954	25 0.068
26	23.123	32.979	42.836	52.692	62.549	12.405	22.262	32.118	26 0.071
27	23.287	33.144	43.000	52.857	62.713	12.570	22.426	32.283	27 0.074
28	23.451	33.308	43.164	53.021	62.877	12.734	22.590	32.447	28 0.077
29	23.616	33.472	43.329	53.185	63.042	12.898	22.755	32.611	29 0.079
30	23.780	33.637	43.493	53.349	63.206	13.062	22.919	32.775	30 0.082
31	23.944	33.801	43.657	53.514	63.370	13.227	23.083	32.940	31 0.085
32	24.109	33.965	43.822	53.678	63.534	13.391	23.247	33.104	32 0.088
33	24.273	34.129	43.986	53.842	63.699	13.555	23.412	33.268	33 0.090
34	24.437	34.294	44.150	54.007	63.863	13.720	23.576	33.432	34 0.093
35	24.601	34.458	44.314	54.171	64.027	13.884	23.740	33.597	35 0.096
36	24.766	34.622	44.479	54.335	64.192	14.048	23.905	33.761	36 0.099
37	24.930	34.786	44.643	54.499	64.356	14.212	24.069	33.925	37 0.101
38	25.094	34.951	44.807	54.664	64.520	14.377	24.233	34.090	38 0.104
39	25.259	35.115	44.971	54.828	64.684	14.541	24.397	34.254	39 0.107
40	25.423	35.279	45.136	54.992	64.849	14.705	24.562	34.418	40 0.110
41	25.587	35.444	45.300	55.156	65.013	14.869	24.726	34.582	41 0.112
42	25.751	35.608	45.464	55.321	65.177	15.034	24.890	34.747	42 0.115
43	25.916	35.772	45.629	55.485	65.342	15.198	25.054	34.911	43 0.118
44	26.080	35.936	45.793	55.649	65.506	15.362	25.219	35.075	44 0.120
45	26.244	36.101	45.957	55.814	65.670	15.527	25.383	35.239	45 0.123
46	26.408	36.265	46.121	55.978	65.834	15.691	25.547	35.404	46 0.126
47	26.573	36.429	46.286	56.142	65.999	15.855	25.712	35.568	47 0.129
48	26.737	36.593	46.450	56.306	66.163	16.019	25.876	35.732	48 0.131
49	26.901	36.758	46.614	56.471	66.327	16.184	26.040	35.897	49 0.134
50	27.066	36.922	46.778	56.635	66.491	16.348	26.204	36.061	50 0.137
51	27.230	37.086	46.943	56.799	66.656	16.512	26.369	36.225	51 0.140
52	27.394	37.251	47.107	56.964	66.820	16.676	26.533	36.389	52 0.142
53	27.558	37.415	47.271	57.128	66.984	16.841	26.697	36.554	53 0.145
54	27.723	37.579	47.436	57.292	67.149	17.005	26.861	36.718	54 0.148
55	27.887	37.743	47.600	57.456	67.313	17.169	27.026	36.882	55 0.151
56	28.051	37.908	47.764	57.621	67.477	17.334	27.190	37.047	56 0.153
57	28.215	38.072	47.928	57.785	67.641	17.498	27.354	37.211	57 0.156
58	28.380	38.236	48.093	57.949	67.806	17.662	27.519	37.375	58 0.159
59	28.544	38.400	48.257	58.113	67.970	17.826	27.683	37.539	59 0.162
Mean Solar.	8 ^h .	9 ^h .	10 ^h .	11 ^h .	12 ^h .	13 ^h .	14 ^h .	15 ^h .	For Seconds.

TABLE III.—MEAN SOLAR INTO SIDEREAL TIME.

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TO BE ADDED TO A MEAN TIME INTERVAL.

Mean Solar.	16 ^h .	17 ^h .	18 ^h .	19 ^h .	20 ^h .	21 ^h .	22 ^h .	23 ^h .	For Seconds.
m	m s	m s	m s	m s	m s	m s	m s	m s	s s
0	2 37.704	2 47.560	2 57.417	3 7.273	3 17.129	3 26.986	3 36.842	3 46.699	0 0.000
1	2 37.868	2 47.724	2 57.581	3 7.437	3 17.294	3 27.150	3 37.007	3 46.863	1 0.003
2	2 38.032	2 47.889	2 57.745	3 7.602	3 17.458	3 27.315	3 37.171	3 47.027	2 0.005
3	2 38.196	2 48.053	2 57.909	3 7.766	3 17.622	3 27.479	3 37.335	3 47.192	3 0.008
4	2 38.361	2 48.217	2 58.074	3 7.930	3 17.787	3 27.643	3 37.500	3 47.356	4 0.011
5	2 38.525	2 48.381	2 58.238	3 8.094	3 17.951	3 27.807	3 37.664	3 47.520	5 0.014
6	2 38.689	2 48.546	2 58.402	3 8.259	3 18.115	3 27.972	3 37.828	3 47.685	6 0.016
7	2 38.854	2 48.710	2 58.566	3 8.423	3 18.279	3 28.136	3 37.992	3 47.849	7 0.019
8	2 39.018	2 48.874	2 58.731	3 8.587	3 18.444	3 28.300	3 38.157	3 48.013	8 0.022
9	2 39.182	2 49.039	2 58.895	3 8.751	3 18.608	3 28.464	3 38.321	3 48.177	9 0.025
10	2 39.346	2 49.203	2 59.059	3 8.916	3 18.772	3 28.629	3 38.485	3 48.342	10 0.027
11	2 39.511	2 49.367	2 59.224	3 9.080	3 18.937	3 28.793	3 38.649	3 48.506	11 0.030
12	2 39.675	2 49.531	2 59.388	3 9.244	3 19.101	3 28.957	3 38.814	3 48.670	12 0.033
13	2 39.839	2 49.696	2 59.552	3 9.409	3 19.265	3 29.122	3 38.978	3 48.834	13 0.036
14	2 40.003	2 49.860	2 59.716	3 9.573	3 19.429	3 29.286	3 39.142	3 48.999	14 0.038
15	2 40.168	2 50.024	2 59.881	3 9.737	3 19.594	3 29.450	3 39.307	3 49.163	15 0.041
16	2 40.332	2 50.188	3 0.045	3 9.901	3 19.758	3 29.614	3 39.471	3 49.327	16 0.044
17	2 40.496	2 50.353	3 0.209	3 10.066	3 19.922	3 29.779	3 39.635	3 49.492	17 0.047
18	2 40.661	2 50.517	3 0.373	3 10.230	3 20.086	3 29.943	3 39.799	3 49.656	18 0.049
19	2 40.825	2 50.681	3 0.538	3 10.394	3 20.251	3 30.107	3 39.964	3 49.820	19 0.052
20	2 40.989	2 50.846	3 0.702	3 10.559	3 20.415	3 30.271	3 40.128	3 49.984	20 0.055
21	2 41.153	2 51.010	3 0.866	3 10.723	3 20.579	3 30.436	3 40.292	3 50.149	21 0.057
22	2 41.318	2 51.174	3 1.031	3 10.887	3 20.744	3 30.600	3 40.456	3 50.313	22 0.060
23	2 41.482	2 51.338	3 1.195	3 11.051	3 20.908	3 30.764	3 40.621	3 50.477	23 0.063
24	2 41.646	2 51.503	3 1.359	3 11.216	3 21.072	3 30.929	3 40.785	3 50.642	24 0.066
25	2 41.810	2 51.667	3 1.523	3 11.380	3 21.236	3 31.093	3 40.949	3 50.806	25 0.068
26	2 41.975	2 51.831	3 1.688	3 11.544	3 21.401	3 31.257	3 41.114	3 50.970	26 0.071
27	2 42.139	2 51.995	3 1.852	3 11.708	3 21.565	3 31.421	3 41.278	3 51.134	27 0.074
28	2 42.303	2 52.160	3 2.016	3 11.873	3 21.729	3 31.586	3 41.442	3 51.299	28 0.077
29	2 42.468	2 52.324	3 2.181	3 12.037	3 21.893	3 31.750	3 41.606	3 51.463	29 0.079
30	2 42.632	2 52.488	3 2.345	3 12.201	3 22.058	3 31.914	3 41.771	3 51.627	30 0.082
31	2 42.796	2 52.653	3 2.509	3 12.366	3 22.222	3 32.078	3 41.935	3 51.791	31 0.085
32	2 42.960	2 52.817	3 2.673	3 12.530	3 22.386	3 32.243	3 42.099	3 51.956	32 0.088
33	2 43.125	2 52.981	3 2.838	3 12.694	3 22.551	3 32.407	3 42.264	3 52.120	33 0.090
34	2 43.289	2 53.145	3 3.002	3 12.858	3 22.715	3 32.571	3 42.428	3 52.284	34 0.093
35	2 43.453	2 53.310	3 3.166	3 13.023	3 22.879	3 32.736	3 42.592	3 52.449	35 0.096
36	2 43.617	2 53.474	3 3.330	3 13.187	3 23.043	3 32.900	3 42.756	3 52.613	36 0.099
37	2 43.782	2 53.638	3 3.495	3 13.351	3 23.208	3 33.064	3 42.921	3 52.777	37 0.101
38	2 43.946	2 53.803	3 3.659	3 13.515	3 23.372	3 33.228	3 43.085	3 52.941	38 0.104
39	2 44.110	2 53.967	3 3.823	3 13.680	3 23.536	3 33.393	3 43.249	3 53.106	39 0.107
40	2 44.275	2 54.131	3 3.988	3 13.844	3 23.700	3 33.557	3 43.413	3 53.270	40 0.110
41	2 44.439	2 54.295	3 4.152	3 14.008	3 23.865	3 33.721	3 43.578	3 53.434	41 0.112
42	2 44.603	2 54.460	3 4.316	3 14.173	3 24.029	3 33.886	3 43.742	3 53.598	42 0.115
43	2 44.767	2 54.624	3 4.480	3 14.337	3 24.193	3 34.050	3 43.906	3 53.763	43 0.118
44	2 44.932	2 54.788	3 4.645	3 14.501	3 24.358	3 34.214	3 44.071	3 53.927	44 0.120
45	2 45.096	2 54.952	3 4.809	3 14.665	3 24.522	3 34.378	3 44.235	3 54.091	45 0.123
46	2 45.260	2 55.117	3 4.973	3 14.830	3 24.686	3 34.543	3 44.399	3 54.256	46 0.126
47	2 45.425	2 55.281	3 5.137	3 14.994	3 24.850	3 34.707	3 44.563	3 54.420	47 0.129
48	2 45.589	2 55.445	3 5.302	3 15.158	3 25.015	3 34.871	3 44.728	3 54.584	48 0.131
49	2 45.753	2 55.610	3 5.466	3 15.322	3 25.179	3 35.035	3 44.892	3 54.748	49 0.134
50	2 45.917	2 55.774	3 5.630	3 15.487	3 25.343	3 35.200	3 45.056	3 54.913	50 0.137
51	2 46.082	2 55.938	3 5.795	3 15.651	3 25.508	3 35.364	3 45.220	3 55.077	51 0.140
52	2 46.246	2 56.102	3 5.959	3 15.815	3 25.672	3 35.528	3 45.385	3 55.241	52 0.142
53	2 46.410	2 56.267	3 6.123	3 15.980	3 25.836	3 35.693	3 45.549	3 55.405	53 0.145
54	2 46.574	2 56.431	3 6.287	3 16.144	3 26.000	3 35.857	3 45.713	3 55.570	54 0.148
55	2 46.739	2 56.595	3 6.452	3 16.308	3 26.165	3 36.021	3 45.878	3 55.734	55 0.151
56	2 46.903	2 56.759	3 6.616	3 16.472	3 26.329	3 36.185	3 46.042	3 55.898	56 0.153
57	2 47.067	2 56.924	3 6.780	3 16.637	3 26.493	3 36.350	3 46.206	3 56.063	57 0.156
58	2 47.232	2 57.088	3 6.944	3 16.801	3 26.657	3 36.514	3 46.370	3 56.227	58 0.159
59	2 47.396	2 57.252	3 7.109	3 16.965	3 26.822	3 36.678	3 46.535	3 56.391	59 0.162
Mean Solar.	16 ^h .	17 ^h .	18 ^h .	19 ^h .	20 ^h .	21 ^h .	22 ^h .	23 ^h .	For Seconds.

TABLE FOR FINDING THE LATITUDE BY AN OBSERVED ALTITUDE OF POLARIS.

Reduce the observed altitude of Polaris to the true altitude.

Reduce the recorded time of observation to the local sidereal time.

If the sidereal time is $\begin{cases} \text{less than } 1^h 21^m.2, \text{ subtract it from } 1^h 21^m.2; \\ \text{between } 1^h 21^m.2 \text{ and } 13^h 21^m.2, \text{ subtract } 1^h 21^m.2 \text{ from it;} \\ \text{greater than } 13^h 21^m.2, \text{ subtract it from } 25^h 21^m.2; \end{cases}$

and the remainder is the hour-angle of Polaris.

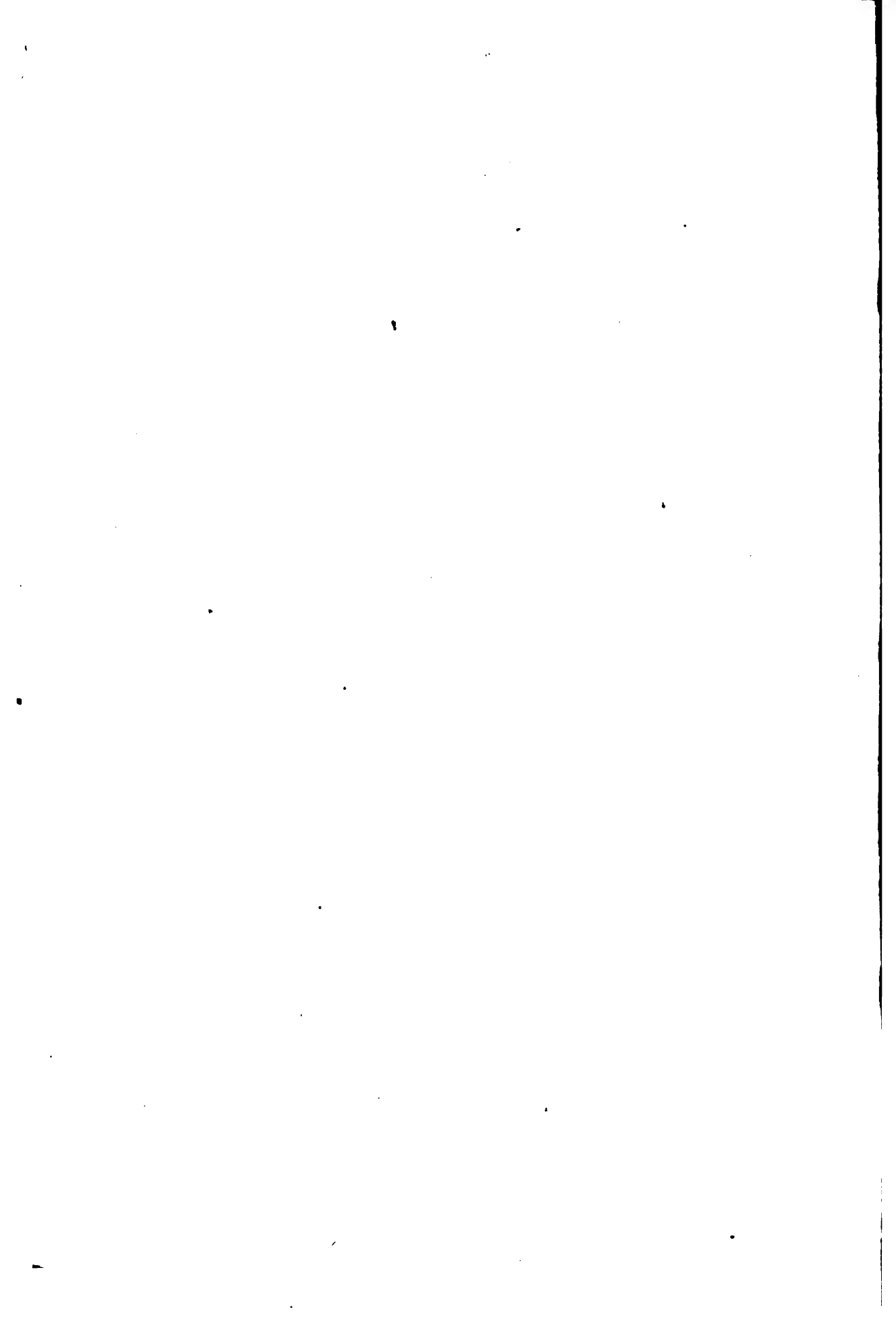
With this hour-angle take out the correction from Table IV (below), and add it to or subtract it from the true altitude, according to its sign. The result is the approximate latitude of the place.

Example.—1897, July 10, at $9^h 29^m 29^s$, P. M., mean solar time, in longitude 29° east of Greenwich, suppose the true altitude of Polaris to be $29^\circ 29'$: required the latitude of the place.

Local astronomical mean time	h	m	s
	9	29	29
Reduction from Table III, for $9^h 29^m 29^s$	+	1	34
Greenwich sidereal time of mean noon, July 10, page III	7	14	40.7
Reduction from Table III, for longitude ($= 1^h 56^m$ east, or minus)	—	0	19
Sum (having regard to signs) is equal to local sidereal time	16	45	24.7
	h	m	s
Subtract sidereal time	25	21	12
Remainder is equal to hour-angle of Polaris	8	35	47.3
True altitude	+	29	29.0
Correction from Table IV (below)	+	0	47.4
Approximate Latitude	+	30	16.4

TABLE IV.—1897.

Hour-Angle.	0 ^h .	1 ^h .	2 ^h .	3 ^h .	4 ^h .	5 ^h .
m						
0	− 1 14.6 0.0	− 1 12.0 0.5	− 1 4.4 0.8	− 0 52.3 1.1	− 0 36.7 1.4	− 0 18.5 1.5
5	1 14.6 0.1	1 11.5 0.4	1 3.6 0.9	0 51.2 1.2	0 35.3 1.5	0 17.0 1.6
10	1 14.5 0.1	1 11.1 0.5	1 2.7 0.9	0 50.0 1.2	0 33.8 1.5	0 15.4 1.6
15	1 14.4 0.1	1 10.6 0.6	1 1.8 1.0	0 48.8 1.3	0 32.3 1.5	0 13.8 1.6
20	− 1 14.3 0.2	− 1 10.0 0.6	− 1 0.8 0.9	− 0 47.5 1.3	− 0 30.9 1.5	− 0 12.2 1.6
25	1 14.1 0.2	1 9.4 0.6	0 59.9 1.0	0 46.2 1.3	0 29.4 1.5	0 10.6 1.6
30	1 13.9 0.2	1 8.8 0.6	0 58.9 1.0	0 44.9 1.3	0 27.9 1.5	0 8.9 1.7
35	1 13.7 0.3	1 8.2 0.7	0 57.9 1.1	0 43.6 1.4	0 26.3 1.5	0 7.3 1.6
40	− 1 13.4 0.3	− 1 7.5 0.8	− 0 56.8 1.1	− 0 42.2 1.3	− 0 24.8 1.5	− 0 5.7 1.6
45	1 13.1 0.3	1 6.7 0.7	0 55.7 1.1	0 40.9 1.3	0 23.3 1.5	0 4.1 1.7
50	1 12.8 0.3	1 6.0 0.7	0 54.6 1.1	0 39.5 1.4	0 21.7 1.6	0 2.4 1.6
55	1 12.4 0.4	1 5.2 0.8	0 53.5 1.1	0 38.1 1.4	0 20.1 1.6	− 0 0.8 1.6
60	− 1 12.0 0.4	− 1 4.4 0.8	− 0 52.3 1.1	− 0 36.7 1.4	− 0 18.5 1.6	+ 0 0.8 1.6
Hour-Angle.	6 ^h .	7 ^h .	8 ^h .	9 ^h .	10 ^h .	11 ^h .
m						
0	+ 0 0.8 1.6	+ 0 20.1 1.5	+ 0 37.9 1.4	+ 0 53.1 1.2	+ 1 4.8 0.8	+ 1 12.1 0.4
5	0 2.4 1.7	0 21.6 1.5	0 39.3 1.4	0 54.3 1.2	1 5.6 0.8	1 12.5 0.4
10	0 4.1 1.7	0 23.2 1.6	0 40.7 1.4	0 55.4 1.1	1 6.3 0.7	1 12.9 0.4
15	0 5.7 1.6	0 24.7 1.5	0 42.0 1.3	0 56.4 1.1	1 7.1 0.7	1 13.2 0.3
20	+ 0 7.3 1.6	+ 0 26.2 1.5	+ 0 43.3 1.3	+ 0 57.5 1.0	+ 1 7.8 0.6	+ 1 13.5 0.3
25	0 8.9 1.6	0 27.7 1.5	0 44.6 1.3	0 58.5 1.0	1 8.4 0.6	1 13.8 0.2
30	0 10.5 1.6	0 29.2 1.5	0 45.9 1.3	0 59.5 0.9	1 9.0 0.6	1 14.0 0.2
35	0 12.1 1.6	0 30.7 1.5	0 47.2 1.2	1 0.4 1.0	1 9.6 0.6	1 14.2 0.1
40	+ 0 13.7 1.6	+ 0 32.2 1.4	+ 0 48.4 1.2	+ 1 1.4 0.9	+ 1 10.2 0.5	+ 1 14.3 0.1
45	0 15.3 1.6	0 33.6 1.4	0 49.6 1.2	1 2.3 0.8	1 10.7 0.5	1 14.4 0.1
50	0 16.9 1.6	0 35.1 1.4	0 50.8 1.2	1 3.1 0.9	1 11.2 0.5	1 14.5 0.1
55	0 18.5 1.6	0 36.5 1.4	0 52.0 1.1	1 4.0 0.8	1 11.7 0.4	1 14.6 0.0
60	+ 0 20.1 1.6	+ 0 37.9 1.4	+ 0 53.1 1.1	+ 1 4.8 0.8	+ 1 12.1 0.4	+ 1 14.6 0.0



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